AUSTRALIA AND AMERICAS

A Geography Textbook for Middle Schools

PART TWO

'ATIONAL COUNCIL OF EDUCATIONAL I H AN TRAINING

December 1970
Pausa 1892

P. U. 10 T

TEXTBOOK COMMITTEE

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Rs. 2·45

Published at Publication Unit by Shri S. A. Abidin, Secretary, National Council of Education Research and Training, NIE Campus, Sri Aurobindo Marg, New Delhi and printed by M. C. Khunnah at Job Press Private Limited, Kanpur.

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ACKNOWLEDGEMENTS

The National Council of Educational Research and Training expresses its sincere gratitude to the following agencies for having made available the photographs reproduced in this book.

Argentina Embassy, New Delhi (XV, XXII); Australia High Commission, New Delhi (IV, V, VI, VII, VIII, IX, X); Brazil Embassy, New Delhi (XVI, XVII, XIX, XX, XXI); Burmah-Shell, New Delhi (XVIII); Canada High Commission, New Delhi (Frontispiece, XXIII, XXIV, XXV, XXVII, XXX, XXXI, XXXII); Government of Maharashtra, Bombay (III); Japan Information Centre, New Delhi (I), Mexico Embassy, New Delhi (XXVIII); New Zealand High Commission, New Delhi (XI, XII, XIII, XIV); United States Information Service, New Delhi (II, XXVI, XXIX, XXXIII, XXXIV, XXXV).

A Red Indian Girl

This young girl from Canada is one of the original inhabitants of the New World, the Americas. Look at her bright eyes, fine national costume and attractive jewellery.

UNIT ONE

Movements of Air, Water and Land

The earth on which we live has three familiar parts—the land, water and air.

The land is made up of rocks not excluding the soils. This solid part of the earth is called Lithosphere or 'Rock-sphere'. It consists of the continents, islands and also the basins that hold oceans, seas and lakes.

The earth's waters found in oceans, seas, lakes and streams together form the Hydrosphere or 'Water-sphere.' It occupies a major part of the earth's surface.

Air, invisible though, surrounds the earth and is called the Atmosphere or 'Air-sphere'. It extends several hundred kilometres upwards, from the earth's surface.

There are constant movements in the atmosphere, hydrosphere and even to a certain extent in lithosphere. In this unit you will know in detail how some of these movements are caused and how they result in the formation of winds, clouds, waves, ocean currents, tides, earthquakes and volcanoes.

1

The Air and Its Changing Temperature

THE TERMS YOU ALREADY KNOW: *Atmosphere*—The envelope of air surrounding the earth. The *Temperature*—The degree of heat within the atmosphere. *Thermometer*—An instrument for measuring temperature. *On-shore Winds*—Winds blowing in from the sea.

You know that the atmosphere is the envelope of air surrounding the earth. It is several hundred kilometres thick. It is denser near the surface of the earth and becomes thinner and thinner as one moves away from the earth's surface.

The atmosphere, like air, is a mixture of several gases. It contains nitrogen, oxygen, carbon-dioxide and traces of other gases. In the lower part of the atmosphere, there is also a changing amount of water vapour and particles of dust. What is the proportion of nitrogen and oxygen in the air?

The proportion of the gases in the air is fairly constant but not the same everywhere. Animals inhale oxygen and give off carbon-dioxide. Plants absorb carbon-dioxide and manufacture food in green leaves with the help of the sun light. Oxygen is given off in this process. Thus both oxygen and carbon-dioxide are very important gases of the atmosphere. Find out in what way nitrogen

is useful to us.

For its study, the atmosphere is usually divided into three important zones or layers. They are called the *Troposphere*, the *Stratosphere* and the *Ionosphere*. There is no sharp boundary between them. Look at Fig. 1 showing these zones and their heights. Try to find out the approximate thickness of each of them from the figure.

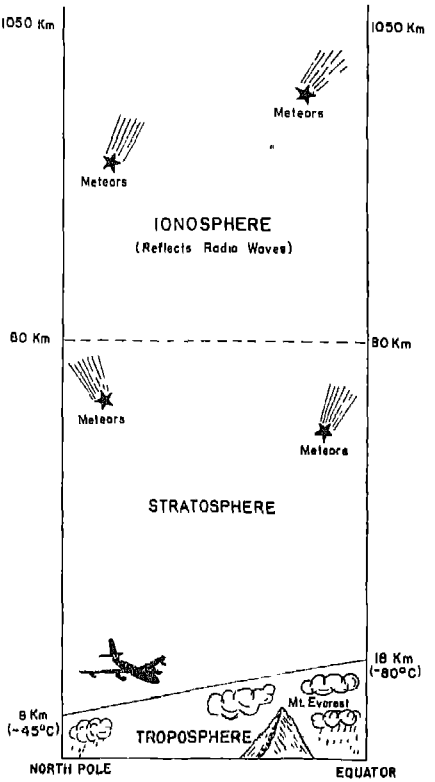


FIG. 1 *Layers of the Atmosphere*
Note the height and thickness of each layer. Why is troposphere very important? In what layer of the atmosphere do the modern jet aeroplanes fly?

The troposphere is the densest part of the atmosphere. Its height varies between 8 and 18 kilometres from the earth's surface. The height of the troposphere is greater over the equator than above the poles. All the changes in the weather take place in troposphere only. As a result this lower and the densest layer of the atmosphere is of great significance to man.

This dense layer of the atmosphere protects us from the sun's heat by day and keeps the earth's surface warm at night. Again it is this part of the atmosphere where both temperature and pressure of the air begin to drop as one goes higher and higher from the earth's surface.

How the Atmosphere is Heated

The sun is the main source of heat to us. It constantly *radiates* heat. This means that it gives out heat in all directions. The heat given out by the sun is called *solar radiation.* But the earth being very small and far, far away from the sun, it receives only an extremely small fraction of the solar radiation. This small amount of heat received by the earth is known as *insolation.* The word insolation really means "*incoming solar radiation*".

The solar radiation passes through the atmosphere before it strikes the earth's surface. Some of this heat is absorbed by the land and the sea. The heated surface warms the air close to it. The warmed air becomes lighter and begins to move upwards. Cool air coming along the surface from nearby areas comes in to fill the space left by the warm air. A flow of air is thus set up—warm air rising up and cool air coming in to fill up its place. You know how water in a pot is heated when kept on a fire. The heat is carried from one part of the water to another by actual movement of heated particles. This process of heating is called *convection.* The same thing happens when the atmosphere is being heated by the earth's hot surface. It should, therefore, be remembered that the atmosphere is mainly heated from below, by the heated surface of the earth.

Some of the heat received by the earth from the sun is radiated back into the space and is lost. During the day this loss is not felt as the earth is then constantly receiving heat. But after sunset, the insolation stops and the warmed surface of the earth loses heat more quickly by radiation, and it becomes cool.

Temperature

The effect of insolation is not only to raise the temperature of

the earth's surface but also to increase the temperature of the atmosphere.

The effect of the insolation largely depends upon the length of day time, the angle of the sun's rays and the capacity of the surface of the earth to absorb sun's rays.

You have learnt that during summer the long days and short nights produce a general rise in the temperature of a place. On the other hand, short days and long nights in winter produce general fall in the temperature of a place.

When the sun's rays strike the surface of the earth vertically or nearly so, they get concentrated over a small area, giving it a greater amount of heat. On the other hand, the rays striking the earth obliquely are spread over a large area and are able to produce less heating effect. That is why it is hotter at midday than in the morning or evening.

Again, all things on the earth's surface do not absorb heat alike. For example, a ploughed field absorbs more heat than a grassland. Though insolation is the same, they develop different temperatures.

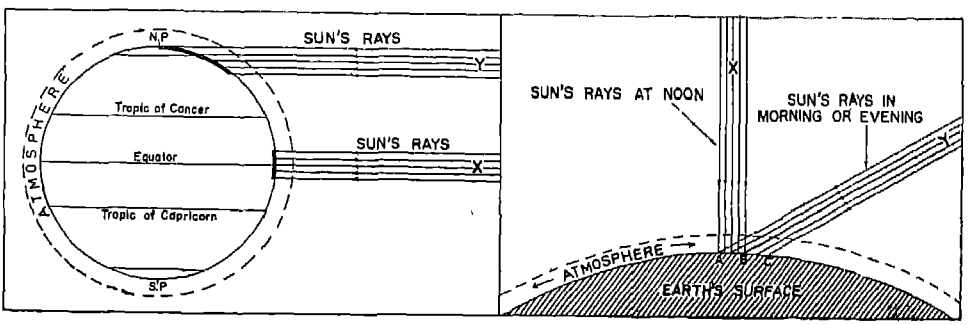


FIG. 2 *Sun's Rays Striking the Earth at Different Angles*
Note that in high latitudes sun's rays are spread over a large area and in low latitudes they concentrate over a small area. Why do the sun's rays at noon give more heating effect than those of morning or evening?

It has been observed that temperature of the atmosphere decreases with increase in height. This is because the atmosphere receives most of its heat from the heated surface of the earth rather than directly from the sun.

The distribution of temperature even on the earth's surface is not uniform. In general the temperature decreases from the equator to the poles. The poles are very very cold; but not the equator. How is it so?

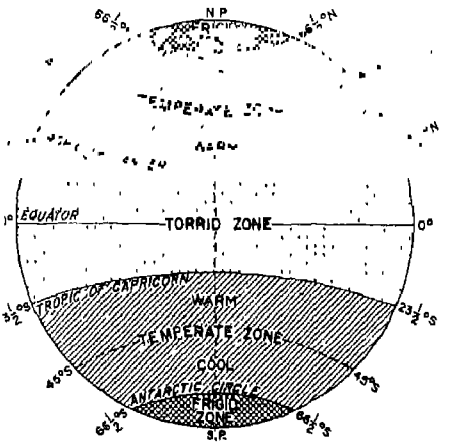
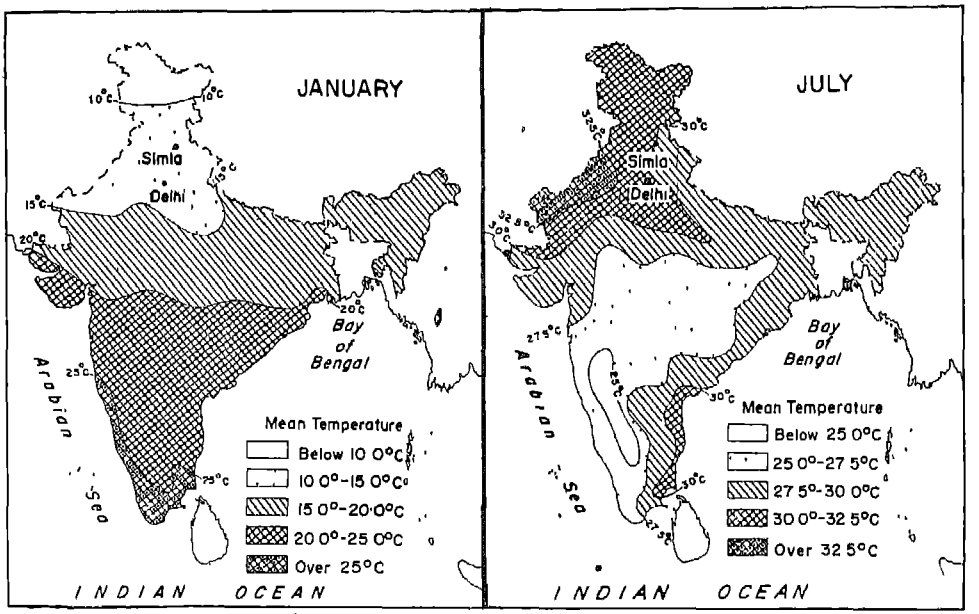


FIG 3 *Heat Zones of the World*
Note the heat zones Torrid Zone is very hot and Frigid Zone is very cold. Why are the temperatures in the tropical zone usually high?

Sometimes, we like to know the distribution of temperature over a large area. The actual temperature figures of several places in a region are collected. The places are carefully plotted on the map. The temperatures of all these places are mentioned against each of these places. Then, lines are drawn joining places having the same temperature. These lines connecting places of equal temperature are known as *isotherms*. The word 'isos' means equal and 'thermos' means heat. It must, however, be remembered that isotherms show the temperature of places, presuming all the places are situated at the sea level. Therefore, the temperatures are actually calculated accordingly.



(Territorial waters of India extend into sea to a distance of 12 nautical miles measured from the appropriate base-line)

FIG. 4. *India—Isotherms in January and in July*
Study the isotherm map of January and note that both Delhi and Simla lie in the same belt i e between 10° C and 15° C isotherms. While making an isotherm map the temperatures of these places have been worked out, presuming that all these places are situated at sea level Why do the temperatures in India increase from north to south in winter?

Factors Influencing Temperature

The *temperature* of a place is the temperature of air within a couple of metres from the ground at a given place. It is affected by several factors:

Latitude: Temperature decreases with increase in latitude. Places away from the equator are colder than those near it. For example, Siberia is colder than the equatorial lands of Africa and

Asia. So is Tokyo cooler than Calcutta. This is because the sun's rays fall more and more obliquely on the earth's surface, as we proceed towards the poles. They have also to pass through a greater depth of the atmosphere before they strike the earth's surface. They have, therefore, less heating effect than the rays falling on the equatorial regions.

Altitude: Temperature generally decreases as we move away from the earth's surface or climb up higher elevations. For instance, it is colder on the mountain top than at its foot.

The general rate at which the temperature drops is roughly 1°C for 165 metres ascent. This explains why Simla is cooler than Delhi; and why Nairobi is comfortably cool, although it is near the equator.

As you already know the isotherms do not show the effect of height on temperature. For drawing isotherms on a map, temperatures are first reduced to sea level. Suppose a place is 1,650 metres above sea level and has a temperature of 15°C on a given day. It means the temperature of this place would be 25°C, if the place was situated at sea level. How is this figure arrived at? For the descent of every 165 metres the temperature would rise by 1°C and hence it would be 10°C more at the sea level than what it was at an altitude of 1,650 metres.

Distance from Sea: Places near the sea are neither very warm in summer nor very cold in winter. They are said to enjoy *equable climate.* On the other hand, places far away from the sea are very hot in summer and very cold in winter. So they are said to have an *extreme climate.*

It is our common knowledge that land warms up more quickly than water. In summer, land gets warmer than the sea. As a result

of this difference between the temperatures of land and sea, the on-shore winds bring a cooling effect on the lands near the seas. But lands situated far away from the sea are denied this benefit, making them very hot indeed!

In winter, on the other hand, the land surfaces lose heat quickly and become cooler than the seas. It must be remembered that water cools more slowly as compared to land In other words, water takes longer to warm as also longer to cool. Whereas the warm seas keep the nearby lands warm, the lands away from the seas remain cold in winter. Now you may be able to explain why Nagpur is hotter in summer and colder in winter than either Bombay or Calcutta.

To sum up, we can say that the temperature of a place is determined by its latitude, altitude, and distance from the sea.

THE NEW TERMS YOU HAVE LEARNT. *Insolation*—Incoming solar radiation received at the surface of the earth. *Convection*—Process of heating in which heat is carried from one part to another by actual movement of hot particles. *Isotherm*—An imaginary line drawn on a map and passing through places having the same temperature reduced to sea level.

EXERCISES

Review Questions

1. Answer the following questions:
   (i) What are the different zones of the atmosphere?
   (ii) Name the gases that are found in air.
   (iii) How is the troposphere important to us?
   (iv) Why does temperature decrease with the increase in height?

. Distinguish between.
   (i) Altitude and latitude.
   (ii) Equable and extreme climate.

. Give a single term for each of the following:
   (i) The envelope of air surrounding the earth
   (ii) An imaginary line joining places having equal temperature.
   (iii) Incoming solar radiation.

. Make out correct pairs from the two columns:

(a) The heat given out by the sun through its rays in all directions	(i) Convection
(b) A part of the atmosphere where all weather changes take place	(ii) Solar Radiation
(c) A process of heating in which the hot particles move from one part to another	(iii) Insolation
	(iv) Troposphere

. What are the factors that influence temperature? Describe in brief how distance from sea affects the temperature of a place.

. The height above sea level of Simla is 2,205 metres and that of Delhi is 239 metres and their temperatures on a day in July are 18°C and 30°C respectively. Reduce the temperature of each place at sea level and compare your results with Fig. 4.

lap Work

7. Study carefully from your atlas the world maps showing January and July isotherms. Compare the areas enclosed by the isotherms showing the highest temperature in the two. What inference will you draw?

'opic for Class Discussion

8. '*Polar and Equatorial Climates*'

   Divide your class into two groups and let each group narrate the climate of one region—either polar or equatorial. They may then discuss the reasons for each climate being what it is.

2

The Air in Motion

THE TERMS YOU ALREADY KNOW: *Tropical Zone*—A region in which it may be possible to see the sun at noon exactly overhead. It is bounded by the Tropics. *Monsoon*—Wind that changes its direction completely with a change of season. *Wind*—Horizontal movement of air along the earth's surface.

AIR around us, invisible though, is as real as a book or a glass of water. Air, like any other object, has weight, and exerts pressure.

You know that we have air above us up to a height of nearly 1,600 kilometres. You will agree, therefore, that all this air must weigh a lot, which it does.

At sea level, the weight of the air column standing over a square centimetre is slightly more than one kilogram. This weight causes air to exert a force or pressure. The pressure exerted by the atmosphere as a result of its weight on the surface of the earth is known as *atmospheric pressure*. The pressure of atmosphere is measured by an instrument called the *barometer*.

You know that we prepare isotherm maps for showing the distribution of temperature over a large area. In the same way pressure maps are also prepared. Here we collect figures of

atmospheric pressure at different places and then join, by lines, the places having same pressure. Such an imaginary line joining places of equal pressure is known as *isobar*. The word 'isos' means equal and 'baros' means pressure. In these maps too the pressure of different places is calculated, presuming that they are situated at sea level.

The value of each isobar on a map is generally expressed in millibars. At sea level, the normal atmospheric pressure is taken to be 1,000 millibars. The atmospheric pressure of any place would be found fluctuating around this figure.

At sea level, the pressure of atmosphere is high. When we climb a mountain or go up in an aeroplane, pressure of the atmosphere decreases. The reason is that we have less air above us when we are at the top of the mountain than when at its foot. For the

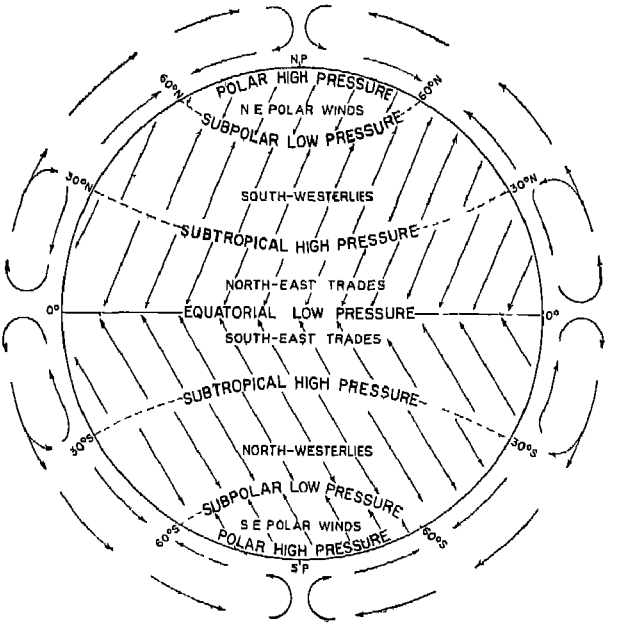


FIG. 5. *Pressure Belts and the Prevailing Winds*
Note the pressure belts and prevailing winds of the world. Find out why the winds deflect

same reason, the air is not so dense at a height as it is at sea level. Therefore, we conclude that atmospheric pressure decreases with increasing altitude.

The pressure of atmosphere on the earth's surface is not the same everywhere. It changes from place to place. Why should it be so?

Owing to high temperatures near the equator the lower layers of air over there get heated. The air expands as it is heated and rises rapidly, producing a low pressure belt all along the equator. It is called the *equatorial low pressure belt.*

The rising air cools and spreads out moving towards the poles. It begins to sink at about the latitudes 30° north and south to pile up there. As a result, the high pressure areas known as the *subtropical high pressure belts* are developed.

At the north and south poles cold, and hence heavy, air accumulates. This produces high pressure areas known as the *polar high pressure belts.*

At about the latitudes 60° north and south there are low pressure belts. They are known as *subpolar low pressure belts.*

All these pressure belts are not completely stationary but they show some seasonal movement, either southwards or northwards.

Wind

Air moving horizontally along the earth's surface is known as *wind.* We know that air moves in all directions. A movement of air upwards or downwards is often called *air current.*

To specify a wind we give it a name. Winds are named after the direction from which they blow. Thus a wind blowing from the south is called the south wind. The speed of a wind is expressed in

kilometres per hour and it is measured by an instrument called an *anemometer*. 'Anemos' means wind and 'meter' means measurer.

When there is a difference in pressure at two places, a wind begins to blow from the high pressure area towards the low pressure area. It continues to blow as long as a difference in pressure exists. As, there are permanent pressure belts on the surface of the earth, they produce permanent winds.

The direction of winds in both the Hemispheres is affected by the rotation of the earth. They are deflected to their right in the Northern Hemisphere and to their left in the Southern.

Kinds of Winds

There are some winds which blow constantly throughout the year in a particular direction. They blow from the high pressure to low pressure belts of the earth. These winds are known as *permanent* or *prevailing winds*. Read the names of these winds from Fig. 5. Besides these, some winds blow only during a particular period of the day or the year. They also blow in a specific direction. They are known as *periodic winds*. The land and sea breezes and the monsoons are examples of such periodic winds. Some winds are not regular or constant. They keep on changing their direction. They are known as *variable winds*.

The Prevailing Winds

Trade Winds: The winds which blow from the subtropical high pressure belts towards the low pressure belt of the equator are called the *Trade Winds*. They are called *trade* winds simply because they follow the same path year in and year out. They have thus nothing to do with the word trade or commerce. These winds blow mainly in the Tropical Zone.

In the Northern Hemisphere, these winds blow from north-east. They are, therefore, called the *North-East Trade Winds.* In the Southern Hemisphere, they blow from south-east and are known as the *South-East Trade Winds.*

Westerlies. Winds that blow from the subtropical high pressure belts towards the subpolar low pressure belts are called the *Westerlies* because of their general direction from the west. They are called the *South-Westerlies* in the Northern Hemisphere and *North-Westerlies* in the Southern Hemisphere. Owing to the absence of great land-masses in the Southern Hemisphere, the North-Westerlies blow strongly between latitudes 40°S and 60°S and are known as the *Roaring Forties* or the *Brave Winds.*

Polar Winds: In the Northern Hemisphere, north-east winds blow from the high pressure polar belt towards the subpolar low pressure belt near 60°N latitude. In the Southern Hemisphere south-east winds blow from the high pressure polar belt towards the subpolar low pressure belt near 60°S latitude. These winds are known as the *Polar Winds.*

Periodic Winds

Sea and Land Breezes: Those who live near the sea know that a light wind or breeze blows from the sea to the coastal area for some time during the day. At night it blows from the land to the sea.

During the day the land heats up more rapidly than the sea. The air over the land expands and rises, causing low pressure area on the land. Towards this low pressure area on the land the cooler air from the sea moves in. This is known as *sea breeze.*

After sunset, the land cools more rapidly than the sea. As a result the sea water remains warmer than the land. Air pressure

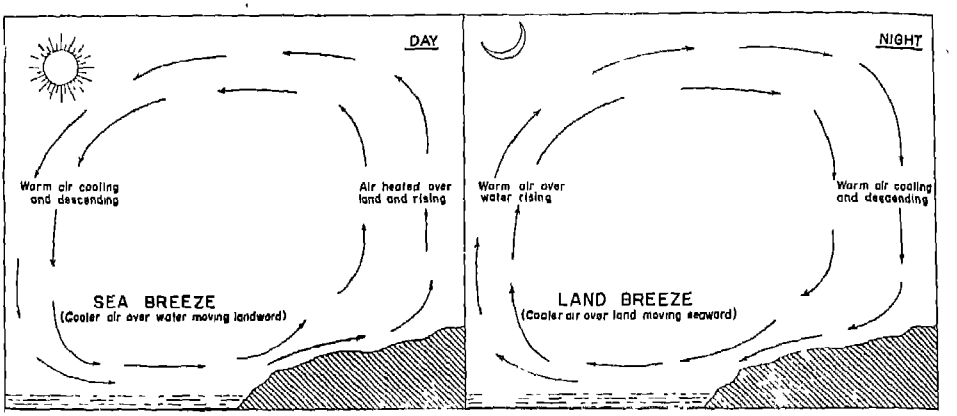
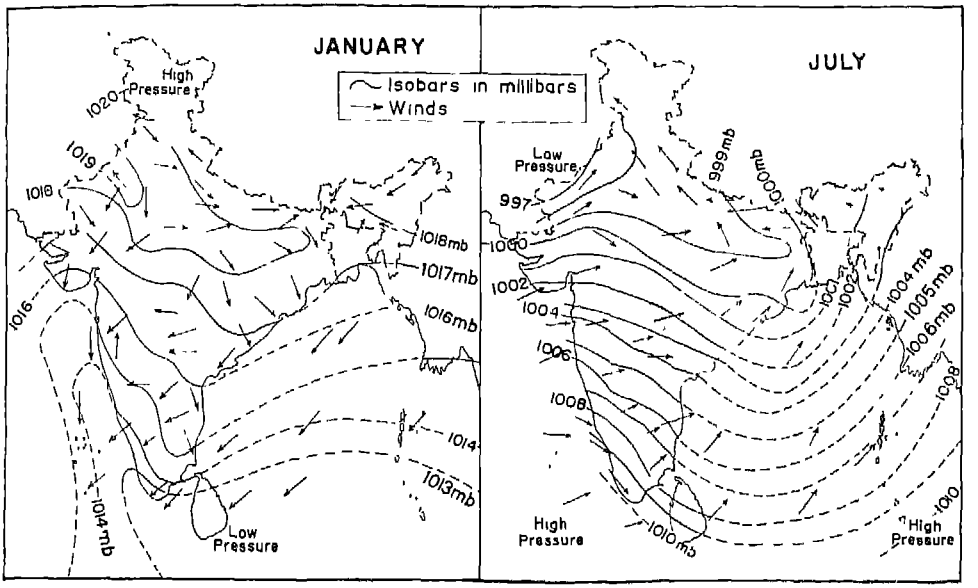


FIG 6 *Sea Breezes and Land Breezes*
The sea breeze blows during the day time. The land breeze blows at night How is it so?

on the sea is, therefore, lower than what it is on the land. The relatively cold and heavy air over the land starts moving over the sea. The wind blowing from the land to the sea is known as *land breeze.*

Monsoon Winds: You know that India lies within the region of north-east trade winds. From the map you will notice that they are essentially land-bearing winds. Little rain can be expected from such winds. Yet, we do receive a fairly good amount of rainfall in our country. How does it happen? Which winds bring us this rain? In summer, the air on the land is much warmer than the wind over the sea. As a result, an intense low pressure area is developed on land, particularly in the north-west part of the Indian subcontinent. This intense low pressure area attracts winds from the sea. The winds which change their normal north-east direction completely bringing rains to our land are well known as *monsoon winds.* They blow in summer. Very often they are called south-west monsoons because an important branch of the monsoons enters the



(Territorial waters of India extend into sea to a distance of 12 nautical miles measured from the appropriate base-line)

FIG. 7. *Seasonal Winds in India (January and July)*
Note the general movement of winds In summer they blow from sea to the land and in winter from land to the sea. In summer they are known as south-west monsoons and in winter as retreating monsoons

country from the south-west over the Arabian Sea. The word monsoon is derived from the Arabic word '*mausim*' which means season.

Local Winds

In different parts of the earth, local winds blow over a small area. These local winds last for a short period of time. Most of them are seasonal and have local names. They are either warm or cold and have effect on the local weather.

In the plains of northern India, a hot, dry and dusty wind

blows in the months of May and June. It is called '*Loo*'. It is a dangerous wind that often causes sun-stroke.

Variable Winds

Sometimes there is a marked low pressure area in a region. It is surrounded by a high pressure area all around. As a result, strong winds blow towards the low pressure centre, from all directions. These winds generally blow in a spiral motion, and hence they are called *cyclones*. A cyclone is generally accompanied by heavy rain and occasionally causes great damage to life and property. A sudden drop in the barometer indicates the coming of a cyclone.

Sometimes the situation is just the opposite to that described above. A high pressure centre is now surrounded by a lower pressure all around. In such a case, winds blow out or radiate from the high pressure centre. Such a wind system is known as an *anticyclone*. It is generally accompanied by light winds and clear skies, free from rains.

THE NEW TERMS YOU HAVE LEARNT: *Isobar*—An imaginary line, drawn on a map, which connects places having same atmospheric pressure reduced to sea level at a given time. *Trade Winds*—Winds that originate and blow from the subtropical high pressure belts towards the low pressure belt of the equator. *Cyclone*—An inblowing whirling mass of air with low pressure at its centre. *Anticyclone*—An outblowing whirling mass of air with high pressure at its centre.

EXERCISES

Review Questions

1. Answer the following questions:
   (i) Name the different kinds of winds.
   (ii) What is an isobar?
   (iii) Why does air pressure decrease with increasing height from sea level?

2 Distinguish between
   (i) Land breeze and sea breeze
   (ii) Cyclones and anticyclones.

3 Make out correct pairs from the two columns

(a) An instrument used for measuring atmospheric pressure	(i) Thermometer
(b) An instrument to measure wind speed	(ii) Barometer
(c) An instrument used for measuring temperature	(iii) Anemometer
	(iv) Wind vane

4. Describe briefly the high and low pressure belts and explain how prevailing winds are caused.

Map Work

5. Draw a map of India and show the direction of the monsoon winds. Compare the direction of the winds with those of prevailing winds.

Topic for Class Discussion

6. '*The First Heavy Showers of the Monsoon*'

   Let the students narrate their own experiences of a heavy rain. Then they should try to explain how rains occur at their place.

3

The Air and Its Changing Moisture Content

THE TERMS YOU ALREADY KNOW: *Rain-Bearing Wind*—Moist winds that bring rain. *Convection Air Current*—Current of air rising vertically.

HINK of all the water which lies on the earth's surface. Whether e sun is shining or not, a part of it is always evaporating. The ater vapour thus formed is absorbed into the lower layers of the mosphere. Although the sea-water is salty, the vapour derived m it always consists of fresh water. It is flat or tasteless at first, t flowing into streams and wells it generally becomes sweet or good drink. Thanks to the sun for all the sweet water we have on the rth!

There is always a considerable amount of water vapour in the nosphere. Most of it comes from the water that has evaporated m the oceans, the lakes and the streams.

The amount of water vapour present in the air changes from ace to place and from time to time.

aporation

Have you noticed what happens to the wet clothes when they spread out for drying? Water in them seems to disappear. It

must be going into the air because it cannot go anywhere else. The water in the clothes has changed from water into vapour which we cannot see. When water changes into vapour it is said to evaporate and this process is known as *evaporation.*

Evaporation goes on at all temperatures and at all times. However, the rate of evaporation often changes. It is the highest when it is hot, dry and windy and lowest when it is cold, humid and still. Find out by observation on what kind of days wet clothes dry quicker.

A certain volume of air can hold only a fixed quantity of water vapour at a certain temperature. If the temperature of the same volume of air is increased, it can hold more moisture. For example, a cubic metre of air at 10°C can hold a maximum of 11.4 grams of water vapour. If its temperature is increased to 21° C, the same volume of air can now hold 22.2 grams of water vapour. Conversely a decrease in the temperature decreases the capacity of the air to hold the moisture. Now tell what would happen if warm moist air is cooled. How would altitude affect the capacity of the air to hold the water vapour?

Condensation

You know a certain volume of air at a given temperature can hold only a fixed maximum amount of water vapour. When it holds that maximum, it certainly cannot hold any more. At this stage and for a given temperature the air is said to be *saturated.* If the air holds less than the maximum amount of water vapour it can hold, it is said to be *unsaturated.* Saturated air may become unsaturated if its temperature is increased. Unsaturated air may also become saturated if it is cooled. Can you say why?

Further cooling will result in the air shedding out excess amount water vapour in the form of droplets of water. The temperature which this just happens is known as the *dew point.* Would air be turated or unsaturated at dew point? Can you say why dew point very important to us?

When water vapour changes into water it is said to have ndensed. To condense, vapour must be cooled. When the oling is very intense the water vapour may condense into snow or This process in which water vapour changes into water or snow known as *condensation.* Depending upon the temperature of air, ndensation may change the water vapour in the air into clouds, in or snow.

When water evaporates it always cools things near it, as it takes m them the heat required for evaporation. When water vapour ndenses it gives out this heat to the surrounding air.

ouds

Evaporation taking place near the earth's surface, makes the moist. This moist air being lighter, begins to rise in the sky. ith fall in temperature, the moisture in the air begins to condense o tiny droplets of water or snow. These small droplets of water ng to the dust particles in the air. *Clouds* are made up of millions such tiny droplets of water or minute crystals of ice which remain pended in the air.

Some clouds are high in the atmosphere while some are low. me clouds are thick; and others may be thin. Some appear dark d some white or grey. Thus clouds may be of several types.

The common types of clouds are cirrus, stratus, cumulus and nbus. They are classified according to their shape and altitude.

Cirrus · The feathery white clouds that you sometimes see high up in the sky are cirrus clouds. They generally contain snow and ice and herald a change in weather.

Stratus. The stratus clouds are low and form a grey sheet from horizon to horizon and may bring light rain or drizzle

Cumulus. During the bright summer days you must have seen tall, heap-shaped clouds racing across the sky. Such clouds with a flat base and a rounded top appear somewhat like a cauliflower. These are the cumulus or thunder clouds They may bring a quick shower of rain

Nimbus: These clouds are generally spread over a large area. They are thick, dark and often very low. Nimbus clouds are the real rain clouds.

Fog

Fog is like a cloud on or near the surface of land or water. It is formed due to the cooling of the air below its dew point in the lower layers of the atmosphere. Fog is thicker than mist.

Precipitation

When droplets of water or flakes of snow grow in size and weight, the air is unable to hold them any longer It begins to shed or throw down moisture. This shedding or throwing down of moisture is known as *precipitation.* Precipitation may take place in the form of rain, dew, snow or hailstone.

Let us now see how rain occurs. When a cloud is cooled owing to its rising up or its being blown into a cooler region of the atmosphere, the small droplets of water in it become still colder and come closer. They come so close together that many droplets combine to form big drops of water. These drops are so big that they can no

ıger float in air. Therefore, they fall towards the earth and as :y fall they pick up more and more small drops of water on their y down. It is these falling big drops of water from the clouds ıt make what we call *rain.*

Sometimes on account of sudden cooling, water droplets may ınge into ice particles. These particles may grow to form flakes snow. The coming down of the snow flakes to the earth is known *:nowfall.*

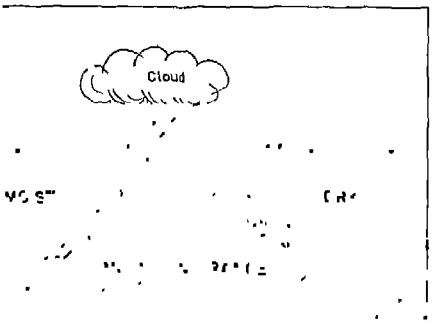


FIG. 8 *Relief Rain*
Note that the rainfall is heavy on the windward side of a mountain and very light on the leeward side Why is it so?

ıds of Rain

Relief Rain: When some high ground or a mountain lies in the h of a moisture-laden wind, it causes the wind to rise up or ascend. ing air expands and cools and produces cloud which may yield ı. This type of rain is known as *relief rain,* as it is mainly due to presence of high relief features like mountain ranges.

The side of the mountain that faces the wind is known as the *dward side.* The rain-bearing winds while ascending the mountain ıes give rain to the windward side. The opposite side of the ıntain is known as the *leeward side.* The descending wind on the vard side is warmed. Its capacity to hold moisture gradually

increases and, therefore, it gives a little or no rain. This area of a little or no rain is called the *rain shadow area.*

Relief rain is common in mountainous parts of a country. For example, the Konkan coast of India receives heavy rainfall from the south-west monsoons in summer. This coastal strip lies at the foot of the western slopes of the Sahyadri Mountains, the northern half of the Western Ghats. But the areas east of the Western Ghats receive a little rain during the same period. Find out which other areas of India also receive relief rain.

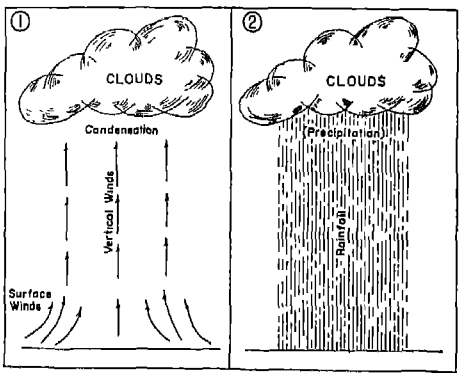


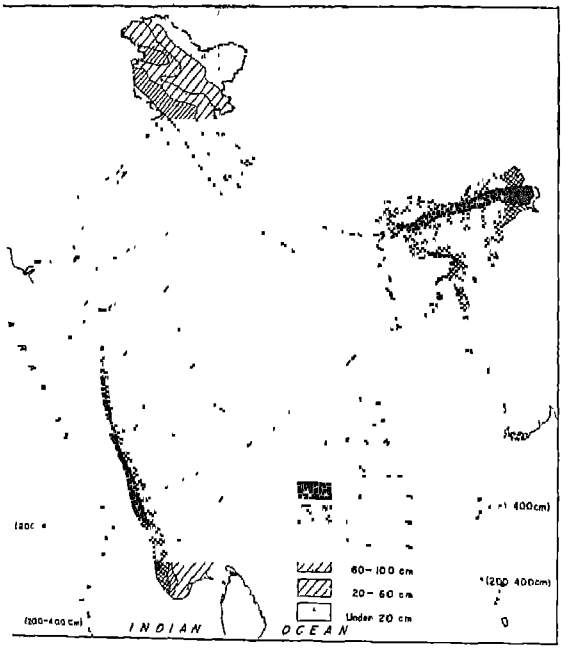
FIG. 9. *Convectional Rain*
Note that the warm moist air while rising upwards leads to the formation of clouds. These clouds cause heavy showers, often accompanied with thunderstorms. In what parts of the world will you expect convectional rains?

Convectional Rain: When land is heated by the sun, the air close to it begins to rise. This produces a convectional air current. If the rising air is moist it produces clouds followed by heavy showers. This kind of rain is known as *convectional rain.*

Sometimes rain-drops are carried upwards by a powerful upward air current to an altitude where temperature is far below freezing point. This causes the raindrops to freeze and combine forming *hail.*

You know that convectional rains are common in the equatorial

·egion of central Africa. Heavy convectional rains are accompanied ɔy thunder and lightning. Convectional rains are commonly ex-ɔerienced in India during summer



(Territorial waters of India extend into sea to a distance of 12 nautical miles measured from the appropriate base-line.)

FIG 10. *India—Average Annual Rainfall*
Note that the regions of heavy rainfall in India are those where the passage of rain-bearing winds from the sea is blocked by the presence of high mountains. Why does the central part of the Deccan Plateau get less rainfall than that of the western or eastern coast?

Cyclonic Rain. This type of rain is caused by whirling storms or yclones. In a cyclone, winds blow in from every side towards a entre. The result is a fast spiral motion which causes the whirling ir to rise up and up This sudden uplifting of warm air causes ain if it is moist enough Rain caused in this way is known as *vclonic rain.*

The amount of rain fallen on the ground is measured in millimetres by an instrument known as the *rain-gauge*.

THE NEW TERMS YOU HAVE LEARNT. *Precipitation*—Throwing down of moisture by the air. It may be in the form of rain, snow, hail or dew. *Cloud*— A mass of water or ice particles light enough to float in the air. *Relief Rain*—Rain caused mainly owing to the presence of high relief features such as mountain ranges. *Convectional Rain*—Rain caused as a result of the quick ascent of the moist air high up into the sky.

EXERCISES

Review Questions

1. Answer the following questions:
   (i) In what way is it harmful to wear wet clothes?
   (ii) Why do clothes dry more quickly on a windy or a sunny day?

2. Distinguish between:
   (i) Stratus and cumulus clouds.
   (ii) Windward side and leeward side

3. Some of the following statements are true and some are false. Underline the sentences that are true and re-write correctly those which are false.
   (i) Evaporation takes place at all times.
   (ii) Nimbus are high clouds.
   (iii) Air can hold more moisture if it is cool.
   (iv) Dust particles obstruct the formation of clouds.

4. Give one term for each of the following:
   (i) The temperature at which moisture in the air begins to condense.
   (ii) High clouds looking white and feathery.
   (iii) Rain caused owing to sudden uplifting of warm moist air by up-currents.
   (iv) Process in which water vapour changes into water.
   (v) An instrument used for measuring rainfall.

5. Explain with the help of diagrams how relief rain and convectional rain occur.

Map Work

6. Trace a map of India and show therein areas which get a very heavy rainfall and those that receive only a scanty rainfall.

Topic for Class Activity and Discussion

7. '*The Glory of Monsoon Clouds*'

Collect information and pictures of different clouds seen during rainy season. Let the whole class discuss the beautiful scenes they produce Students may name some of these clouds.

4

The Ocean Waters and Their Circulation

THE TERMS YOU ALREADY KNOW: *Hydrosphere*—Bodies of water on the earth's surface namely seas, lakes, rivers etc , are collectively known as the hydrosphere. *Prevailing Wind*—A wind which blows more frequently from one direction than from any other. *Iceberg*— A large mass of ice floating in the sea.

MORE than two-thirds of the earth's surface is covered with salt water. This great and continuous expanse of salt water surrounding the land-masses is divided into extensive parts—known as the *oceans*. Smaller divisions of the large expanse of water are called the *seas*.

The three great oceans of the earth are the Pacific, the Atlantic and the Indian Ocean. The Arctic Ocean is an extension of the Atlantic Ocean and the Antarctic is the extension of all the three great oceans. Look at the map in your atlas showing the oceans and find the names of the continents bordering them.

Sea-water is always saltish. It contains several mineral salts dissolved in it. The degree of saltness of sea-water changes from one part of the ocean to another. For example, the amount of salt present in the waters of the Baltic Sea is very low as compared to that of the Red Sea.

The Movements of Ocean Waters

The waters of the seas and oceans are never still. There are three kinds of movements in ocean waters. They are waves, tides and currents.

Waves: In wave motion, the surface of water heaves up and down gently or violently according to weather conditions. Waves are caused by the pushing action of the winds. Particles of water in a wave begin to move chiefly up and down, passing on their movement to their neighbouring particles. Stormy waves may be very high and disastrous.

Tides: Those who live near the sea, know that generally the sea-water rises twice a day and falls twice at regular intervals. Near the coast, the water flows in for a few hours. Then after a pause it begins to recede gradually. This alternate rising and falling of the sea-water generally twice a day is called the *tide.* The rising of sea level is called high tide or up tide and its falling is known as low tide or down tide.

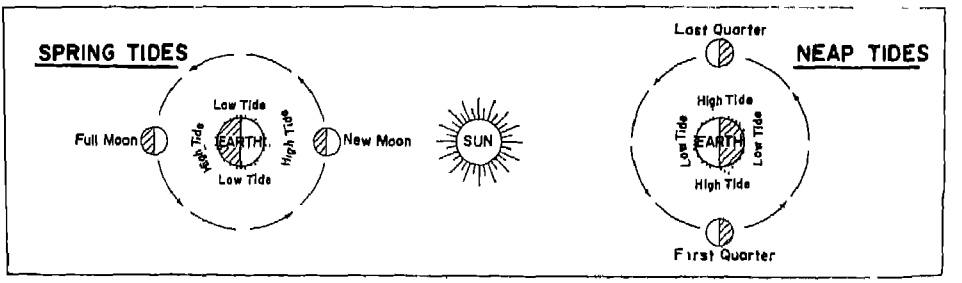


FIG 11 *Spring Tides and Neap Tides*
Note that the spring tides occur when the sun, the moon and the earth are in a line and neap tides occur when the sun, the earth and the moon form a right angle. On what different days of the month spring tides and neap tides occur?

It is believed that this periodic rise and fall in the level of the sea-water is caused mainly by the attraction of the moon and to some extent that of the sun.

Tides do not rise to the same height every day. When the moon, the earth and the sun are in a straight line the pull of the sun and the moon work together, causing very high tides known as *spring tides*. Spring tides occur only on new moon days (*Amavasya*) and on full moon days (*Paurnima*).

On the first quarter and the last quarter days of the month (*Ashtami*), the locations of the moon, the earth and the sun are such that they together make right angles. On such days very low tides known as the *neap tides* occur. During the neap tides the rise of water is the minimum. This is because the tide caused by the pull of the moon is partly cancelled out by the tide caused by the pull of the sun.

The spring tides and the neap tides occur twice a month. Can you say why?

The tides are of great help to us. At the high tide, depth of the water near the coast increases. This enables big ships to enter and leave the harbour safely. Small ships take advantage of the speed of the retreating water of low tides to leave the harbour and enter the sea. Thus tides are of considerable help to fishing, trade and navigation. Tides at some places take away the mud brought down by rivers and prevent silting of the harbour.

Tidal waters have made the river Hoogly in India and the Thames in England very suitable for navigation. The ports of Calcutta on the River Hoogly and London on the River Thames owe their importance to high tides. The timings of the high tides and low tides being of great importance are published in newspapers and naval

calendars. How are these calendars very important to navigators?

Ocean Currents

Ocean waters have another and yet bigger movement. In the oceans, water is found to move from one part to another in big streams. Such streams of water which flow constantly in a definite direction on the surface of the ocean are called *ocean currents*. They are like rivers in the ocean. The quantity of water carried by all the ocean currents is very large. The moving mass of water may take the form of a swift narrow current or a broad, slow moving shallow *drift*. The speed of the currents ranges from 2 to 10 kilometres per hour. The drifts are slower. They may have speed of one to three kilometres only per day.

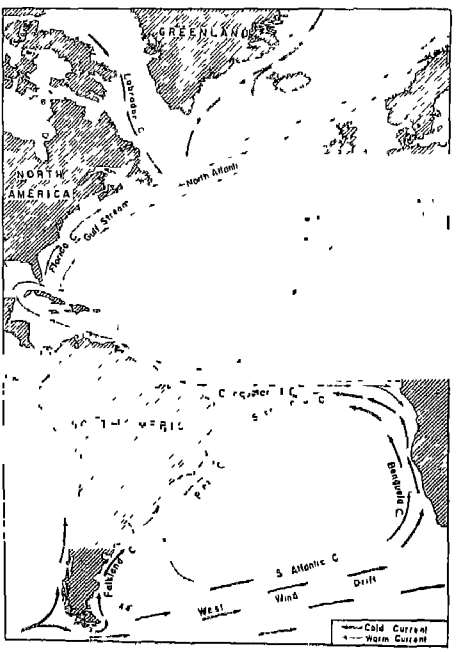


FIG 12 *Currents of the Atlantic Ocean*
Compare the currents of the North Atlantic Ocean with those of the South Atlantic Ocean. What difference do you notice between their direction?

The ocean currents are of two kinds—the warm currents and the cold currents. But the water of the warm current is not really warm. Its temperature is only a few degrees higher than that of the surrounding water.

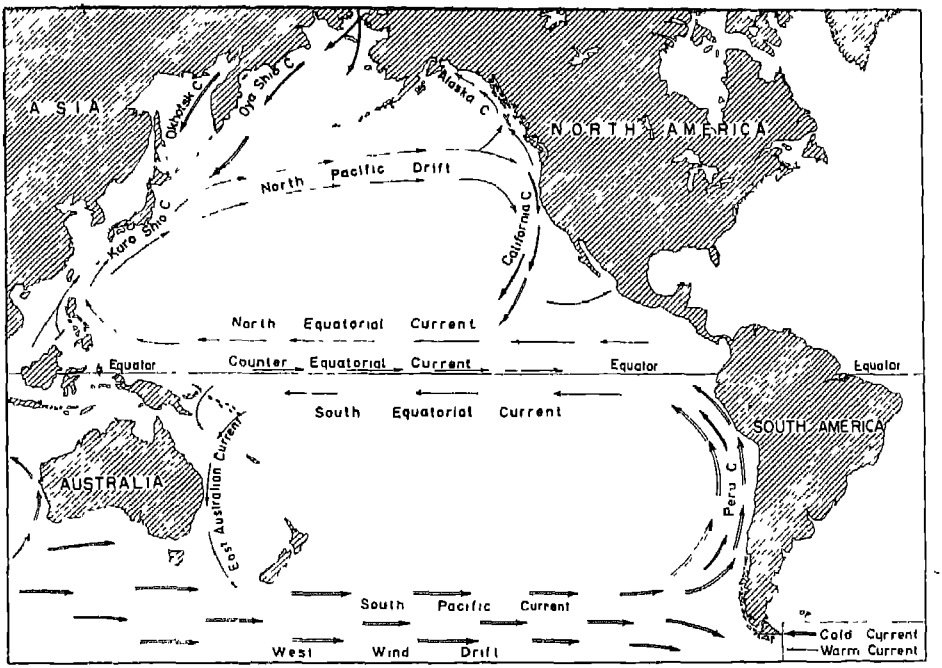


FIG. 13 *Currents of the Pacific Ocean*
Note that the currents in the North and South Pacific have a circular motion. Compare the Kuro Shio Current with the Gulf Stream.

Look at the maps showing the main ocean currents. Find their names and direction. You will find from the maps that warm currents flow from the lower latitudes towards the higher latitudes. The cold currents flow from the higher latitudes towards the lower latitudes. This results in a general circulation of ocean waters.

The ocean currents are mainly caused by the prevailing winds which blow constantly. They are also caused by the differences in temperatures and in salinity or the saltness of the sea-water.

It will be seen from the maps that the direction of many

currents is altered by the obstruction caused by the continents and big islands. Find from the map how the currents change their direction on reaching the land-masses.

Influence of Currents on Climate

You have read that ocean currents have a considerable influence on the climate of the coastal regions and islands near which they flow. Warm currents tend to raise the temperature making a place warmer for its latitude while the cold currents make a place colder.

The winds passing over the warm currents absorb a good deal of moisture and bring heavy rainfall over the coastal regions. The winds passing over the cold currents become dry and cool and bring little or only a scanty rainfall to the coastal areas.

Very thick fog is produced where the warm and cold currents meet together. Find from the maps the regions where the warm and cold currents meet. One such place is near Newfoundland, in North America.

The currents have influence on navigation also. A ship sailing down the current adds to its speed. On the other hand, the speed of the ship sailing up the current is reduced to that extent. Ships prefer to go with the current because it helps to save time and a part of their fuel.

Note from the map in Fig. 12 what type of current flows near the Labrador coast of Canada and that along the western coast of Norway. Note also the latitudes of these two coasts. Which of the two coasts should be colder? Whereas the coast of Norway remains free from ice in winter, the Labrador coast during the same period remains ice-bound.

The warm currents also help to melt the icebergs and thus remove a menace to navigation.

Some Important Ocean Currents

If you study the maps showing currents you will find that there are several warm and cold currents both in the Atlantic and the Pacific oceans. Can you find any similarity in their directions? We shall now study a few of these currents.

The Gulf Stream: The warm current which flows from the Gulf of Mexico is known as the Gulf Stream. It is one of the most important and swiftest currents of the world. The warm equatorial current entering the Gulf of Mexico, provides a constant source of warm water to the Gulf Stream.

The Gulf Stream flows along the coast of the United States till it meets the cold Labrador Current near Newfoundland. From here it comes under the influence of the strong westerly winds and is known as North Atlantic Drift. It spreads out and becomes nearly 400 kilometres wide. On reaching the British Isles, a part of it flows towards Norway.

The North Atlantic Drift has great influence on the climate of the British Isles and the countries of western Europe. The climate is so mild, owing to its warm influence, that in some parts of Ireland palm trees and subtropical flowers flourish in the open and in the southern parts of England grapes occasionally ripen where normally they would not.

The Labrador Current: The cold Labrador Current flows from the Arctic Ocean and moves southward along the coasts of Labrador in Canada. It flows southward till it meets the warm Gulf Stream Current near Newfoundland. This place is known as the

Grand Bank which is a famous fishing ground. The cold Labrador current brings with it enough food for fish. Icebergs from the glaciers of Greenland also float down this current and are a great hazard to shipping. Labrador Current makes even the summers of the coastal regions rather chilly.

Kuro Shio or Japan Current: This is a warm current that flows from the Indonesian Islands. It passes along the south-eastern coast of Honshu Island of Japan. Being warm it prevents winters of southern Japan from being too cold and too long. Like the Gulf Stream it turns east and comes under the influence of strong westerlies. It then flows across the Pacific as the North Pacific Drift. On reaching the American coast one branch moves towards British Columbia and Alaska, while the other moves southward. The former is known as Alaska Current, and the latter the cold California Current.

Oya Shio Current: It is a cold current that flows from the Arctic Ocean. It passes through the Strait of Bering and moves southwards along the coast of Hokkaido, the northern Island of Japan. It meets the warm Kuro Shio Current near the main island of Japan and makes the winter of north Japan long and severe.

THE NEW TERMS YOU HAVE LEARNT: *Tide*—Alternate rising and falling of the sea-water generally twice a day *Spring Tides*—The highest up tides occurring on the new moon and the full moon days. *Neap Tides*—The lowest up tides occurring on the first and the third quarters of the lunar month *Ocean Currents*—Streams of water flowing constantly in definite directions along the surface of the oceans

EXERCISES

Review Questions

1. Answer the following questions:
   (i) Why is sea-water saltish?
   (ii) Name the three types of movements in ocean waters.
   (iii) How are tides useful to us?
   (iv) Which are the two ocean currents influencing the climate of Japan?

2. Distinguish between:
   (i) A warm current and a cold current.
   (ii) Spring tides and neap tides

3 Make out correct pairs from the two columns:

(a) Tides caused as a result of the combined pull of the moon and the sun	(i) Wave
(b) The movement of ocean waters in which the water particles move chiefly up and down	(ii) Tide
(c) Tides caused when pull of the moon seems to be partly cancelled out by the pull of the sun	(iii) Spring tide
(d) Streams of water flowing constantly in definite directions on the surface of ocean waters	(iv) Ocean currents
	(v) Neap tide

4. State briefly what are ocean currents and explain how they are caused.

5. Write a brief account of the Gulf Stream and state with examples how it influences the climate of the North-West Europe.

Map Work

6. Prepare a map showing ocean currents in the Atlantic or the Pacific Ocean. Also prepare a simple map showing the prevailing winds. Compare the two maps and see what conclusions you can reach in regard to the direction of winds and currents

Topic for Class Discussion

7. *'If there were no Currents and Tides'*

   Students may be encouraged to think and then tell the class what would happen if there were no currents and tides. The discussion may be centred round the points such as effects on climate, river-ports, fishing and navigation.

5

The Earth's Crust and Its Movements

THE TERMS YOU ALREADY KNOW. *Lithosphere*—The realm of the earth consisting of solid matter, namely stone or rock. *Lava*—The boiling hot rock-material that comes out from a volcano or fissure *Dormant Volcano*—A volcano which has been inactive for a considerable time in the past

You know that the earth has three familiar parts or realms consisting of land, water and air. The land part of lithosphere is the most important of these because it is the home of man. Which are the other two realms?

Look at the section of the earth in Fig 14. It will give you an idea of the structure of the earth. Note that the outermost shell is the *earth's crust* or *lithosphere*. It forms the continents and the islands and underlies the seas and the oceans. The lithosphere is a thin layer composed of various kinds of light-weight rocks. It is about 60 kilometres thick. The central part of the earth is called the *inner core*. It is believed to be made of metals like iron and nickel, which are fairly heavy. The inner core of the earth is also known as the *metallic core*. The density of the different shells of the earth goes on increasing towards the centre of the earth.

The temperature inside the earth increases with depth. It has

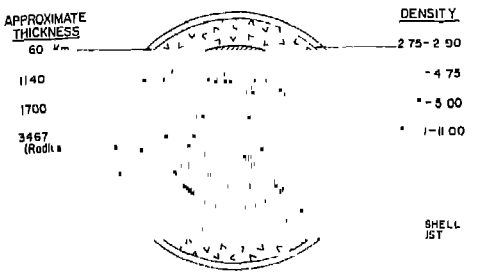


FIG 14 *Section Through the Earth Showing Its Structure*

Note the four shells forming the earth's structure Also note that the density of the rocks is increasing with depth. Which shell would have the highest temperature?

been recorded in mines and deep wells all over the world that the temperature increases progressively at the rate of 1°C for every 32 metres depth. You can imagine how high the temperature must be in the interior of the earth. At such an extremely high temperature all rocks and metals would melt. However, owing to the great pressure of the outer shell, the earth's interior behaves like a solid.

Rocks

The lithosphere is composed of various kinds of rocks. The word 'rock' in popular usage means any hard and resistant material such as granite, sandstone and marble, forming the earth's crust. But in the correct sense it includes even soft and loose materials like soil, silt, sand, gravel, mud, chalk, clay, salt and even coal.

Rocks are the mixtures of one or more minerals. The common minerals forming the rock are felspar and quartz. Some rocks contain particles of useful minerals and are a source of metals like iron, copper or gold, so valuable to us.

Kinds of Rocks

There are three main kinds of rocks each formed in a different way. They are igneous rocks, sedimentary rocks and metamorphic rocks

Igneous Rocks: You know that beneath the lithosphere there is a hot molten rock material with a very high temperature and pressure. It is known as *magma*. When the magma cools and hardens, it forms a rock known as *igneous rock*. When the magma cools slowly under the crust it forms an igneous rock known as *granite*. Granite contains large mineral grains of quartz, felspar and mica. Granites vary in colour from light grey to pink. It is the most abundant of all igneous rocks and is commonly used as a building stone.

Sometimes magma comes out of a hole or crack in the earth's surface. It then cools quickly and forms a rock known as *basalt*. Basalt is a dark coloured igneous rock. Its mineral grains are very small and cannot be identified with the naked eye. This very hard and heavy rock is used for building roads.

Sedimentary Rocks: Tiny particles of rocks are carried away by wind, running water or moving ice and are deposited in layers on the floor of the sea or land. These deposits are also called *sediments*. When these sediments are hardened by their weight or by the weight of sea-water above them, they form into layers of rocks. Such rocks are known as *sedimentary rocks*. Sandstone, limestone and clay are good examples of sedimentary rocks.

Coal is also a sedimentary rock. It has been formed of trees and ferns in the marshes, which in course of time were subjected to a high temperature and pressure deep below the earth's surface some thousands of years ago.

Metamorphic Rocks: When the original form of a rock is entirely changed owing to excessive heat and great pressure it is known as *metamorphic rock*. Both igneous and sedimentary rocks may be changed into metamorphic rocks by heat and pressure. Common examples of metamorphic rocks are marble, quartzite, slate and

gneiss. Marble is formed from limestone and quartzite from sandstone. When clay is subjected to a greater pressure it changes into slate. Gneiss is formed from igneous rocks.

Gradual Movements of the Earth's Crust

The surface features of our earth have never been the same during its long history. There were once seas where we now have high mountains like the Himalayas, Rockies and Andes. Similarly, many mountain chains today lie deep under ocean waters.

The earth's crust undergoes some movement. It is believed that even now the earth's surface has been rising at some places and sinking at others. This movement is so slow that we fail to notice it over many years. But slow movements continued for thousands of years may show extraordinary result. For example, if the land rises only one metre in thousand years it may become one thousand metres higher in a million years. A million years is not a long spell of time compared with the age of the earth. These slow movements of the earth's crust very often build great mountains out of shallow sea beds or convert continental areas into shallow seas. So we call these movements as the *mountain-building* and *continent-building movements.*

Sudden Movements of the Earth's Crust

Sudden movements of the earth's crust are commonly noticed during volcanic eruptions and earthquakes. They bring about a change in the earth's surface very quickly.

Volcanoes: Most people think of a volcano as a mountain that throws out lava and flames, every now and then. Actually *volcano* is a vent or an opening in the earth's crust through which molten lava,

clouds of gases, dust and steam and even pieces of rocks come out. Sometimes the hot lava comes out through a deep crack or a *fissure* in the crust.

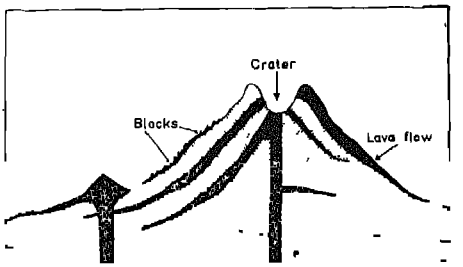
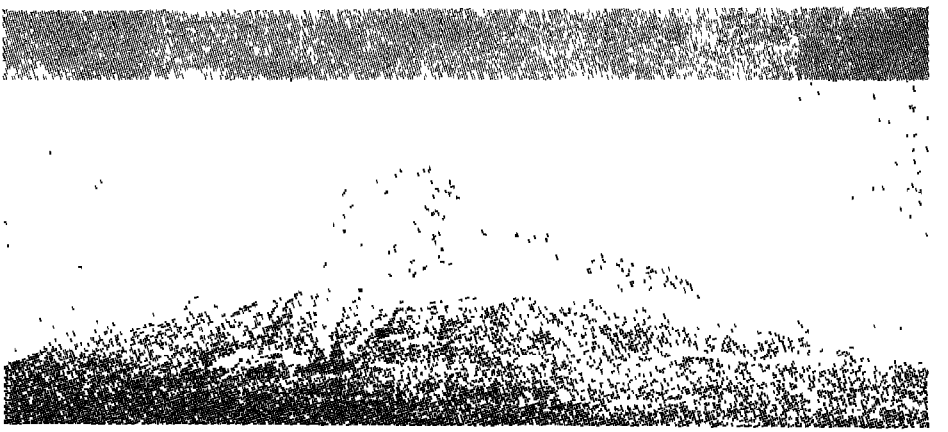


FIG 15 *A Volcanic Cone*
Some of the materials erupted from a volcano accumulate round the opening and form a cone. What are the different materials that are thrown out from a volcano?

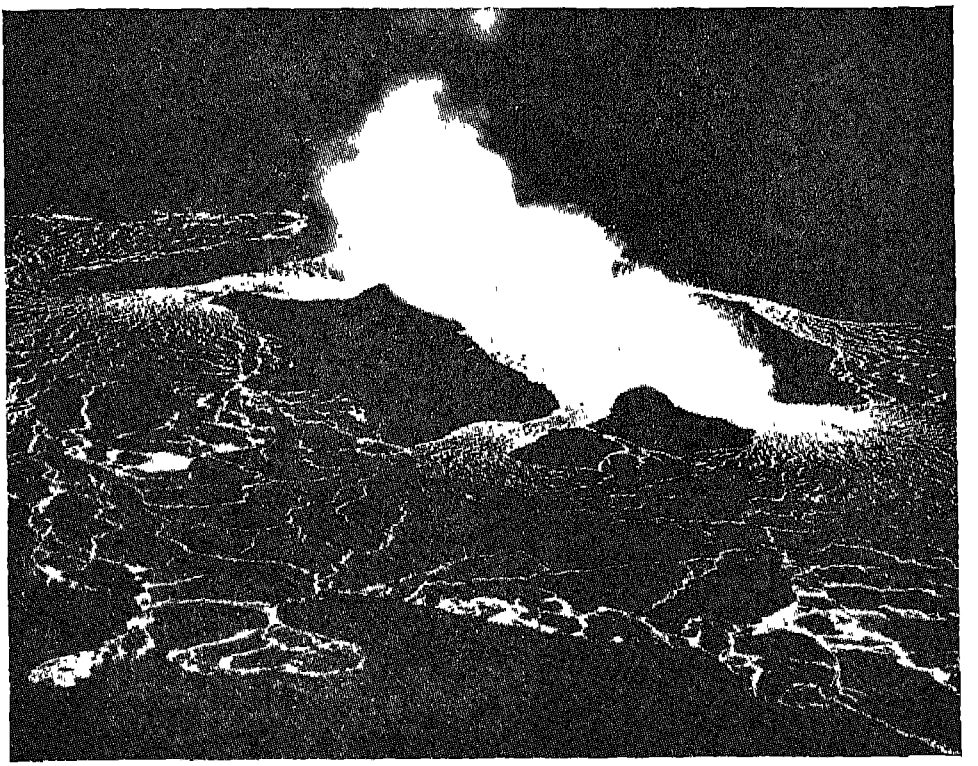
In course of time, the lava and other material accumulate round the opening and form a cone as shown in Fig. 15. A conical hill or a mountain peak is formed around the vent, if the lava goes on depositing for a long time. The top of a volcano generally shows a cup-shaped depression which is called a *crater.*



I. *Mt. Fuji—A Dormant Volcano*
The snow-covered Mt. Fuji is the highest mountain of Japan. It is held in great reverence by the Japanese people. Why is it referred to as a dormant volcano?

All volcanoes do not erupt regularly. Some of them may not show any sign of activity for many years, even then they may not be dead or extinct. They are said to be *dormant* or *sleeping volcanoes*. For example, the Vesuvius near Naples in Italy is a dormant volcano. Can you give any other example of this kind ?

The volcanoes which erupt frequently are called *active*



II. *A Volcano When it Erupts*
This is a picture of an active volcano in Hawaii when it erupted last in 1955. Look at the fire pit in the crater from which lava bubbles and shoots up high into the air. Do you see how hot lava is flowing down the slope?

volcanoes. The Barren Island in the Andaman group of islands in our country and Etna in Sicily are the examples of active volcanoes. Mount Etna has erupted several times in recent years.

A volcano which is neither active nor dormant and which has not erupted within the last few thousand years is known as an *extinct volcano* or *dead volcano.* Mount Kilimanjaro in Tanzania in East Africa is an example of an extinct volcano.

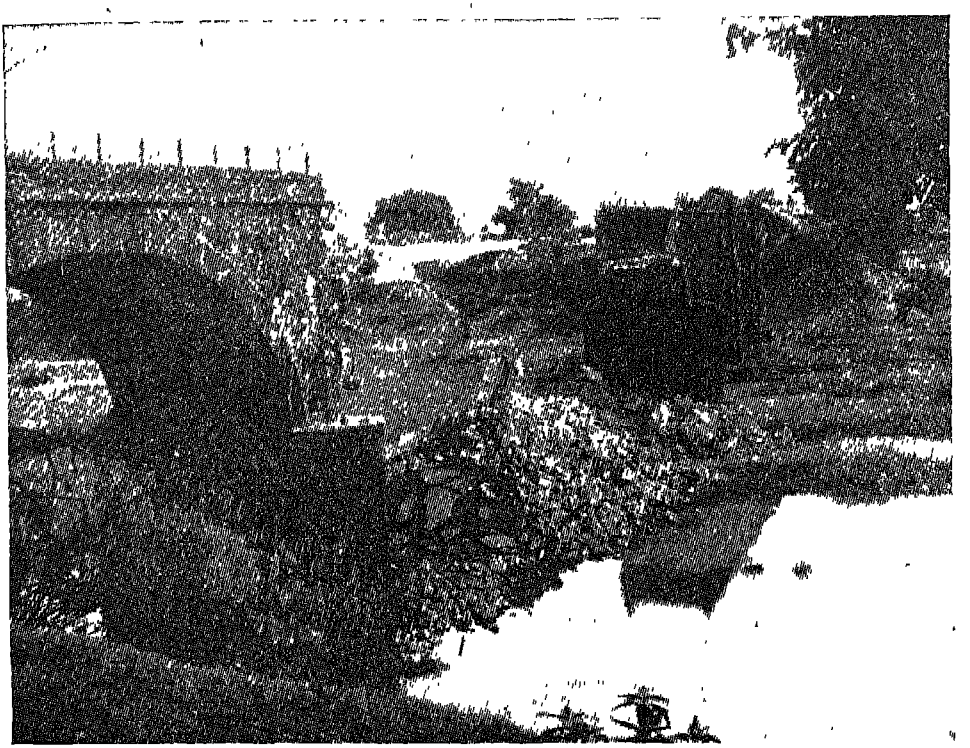
There are several thousand volcanoes in the world. About 450 of them are known to be alive. They are distributed in several belts across the continents. Among these belts the most important is the belt around the Pacific Ocean. This circular belt consists of the largest number of active volcanoes. It includes the western coastal belt of the North and South Americas, the Indonesian Island and the eastern coastal belt of Asia. This circular belt round the Pacific Ocean is called the *Ring of Fire* because of the many active volcanoes in it.

Earthquakes: When the earth's crust suddenly vibrates or shakes we call it an *earthquake.* It is caused due to sudden movements inside the earth. Earthquakes are also caused when a volcano erupts. An earthquake lasts for a few seconds only. Sometimes the earthquakes may be so violent as to cause serious damage.

When an earthquake occurs, vibrations or *earthquake waves* start from the place of its origin. They travel through the earth in all directions. The earthquake waves are recorded by a delicate instrument called *siesmograph.*

Earthquakes may occur anywhere on the earth. However, there are certain areas of the earth where they occur more frequently. These are the regions where the surface of the earth is rather weak. By far, the most active region is a belt surrounding the Pacific Ocean.

More than eighty per cent of the earthquakes occur in this zone. You will remember that most of the active volcanoes are also found in this very region.



III. *Damage Done by an Earthquake*
This river bridge in Maharashtra was torn asunder by a severe shock of the Koyna Earthquake in 1967. Look at the debris of the once formidable bridge built of stones.

In India, most of the earthquakes occur in the Ganga-Brahmaputra valley. Only a few earthquakes have shaken the Deccan Plateau of India in historic times. The latest earthquake

of December 1967 at Koyna Nagar on the western edge of the Western Ghats was one of them. It was of an exceptionally high intensity. The Bihar earthquake of 1934 was one of the most severe earthquakes of India. It was felt in North Bihar and Nepal.

THE NEW TERMS YOU HAVE LEARNT: *Rock*—A mixture of one or more minerals, forming part of the lithosphere *Magma*—A liquid rock-material with a very high temperature and pressure under the earth's surface. *Volcano*—A vent in the earth's crust through which lava and other materials come out.

EXERCISES

Review Questions

1. Answer the following questions:
   (i) Name the three kinds of rocks. Give one example of each.
   (ii) What is a volcano? Name three kinds of volcanoes and give an example of each

2. Distinguish between:
   (i) Igneous rocks and sedimentary rocks
   (ii) Active volcano and a dormant volcano.

3. Read the list of rocks given below. Classify the rocks into three groups—(a) igneous, (b) sedimentary and (c) metamorphic:
   (i) coal; (ii) marble; (iii) slate; (iv) granite; (v) limestone; (vi) basalt; (vii) sandstone; (viii) quartzite; (ix) gneiss and (x) clay.

4. Write a paragraph on the structure of the earth.

5. What are rocks? How are the different kinds of rocks formed?

Picture Reading

6. Study the photographs I and II and state how a dormant volcano is different from the one in action.

Map Work

7. Trace an outline map of the world. Mark and name the following with the help of your atlas.
   (i) The Andes and the Rockies
   (ii) Vesuvius, Etna, Fuji Yama and Kilimanjaro

Topic for Class Discussion

8. '*Volcanoes and Earthquakes*'

   Students may collect pictures and information on (a) sudden eruption of a volcano and (b) damage caused by an earthquake. They may present this information and exhibit the pictures of the same to the class

UNIT TWO

Australia: The Island Continent

The lands of Australia and New Zealand lie entirely in the Southern Hemisphere. These lands together with nearby islands are known as Australasia.

Australia is a rain-thirsty land. It is known for droughts, sudden floods and bushfires. New Zealand on the other hand is a well watered country with a cool mild climate, beautiful forests and green pastures.

The plant and animal life of these lands are different from those of any other part of the world.

The key to prosperity of these new lands lies in pastoral industries which are pursued on modern and scientific lines. Moreover, a very low density of population is largely responsible for the high standard of living enjoyed by the people.

After going through the pages that follow you will find answers to many of your questions, such as: Why are Australia and New Zealand

thinly populated? What is White Australia Policy? Why are the natural vegetation and native animals of these lands different from those of the rest of the world? How and why were the original inhabitants of Australia and New Zealand different from each other?

6

Land and Climate

THE TERMS YOU ALREADY KNOW: *Inland Drainage*—A river system whose waters do not reach the ocean. *River Basin*—A large area drained by a single river and its tributaries.

AUSTRALIA is the smallest continent of the world. In area it is slightly more than twice the size of India and Pakistan put together. It lies entirely south of the equator. Look at the globe and you will notice that Australia lies to the south-east of Asia. Name the oceans lying on the west, south and on the east of this "island continent". Note the Tropic of Capricorn passing almost through the middle of the continent. Find the latitudes and longitudes between which the continent is situated. Name the big islands that lie to the north and south-east of Australia.

Australia was discovered by Captain James Cook, an English seaman, in 1770. He landed near the site of the present Sydney Harbour. In view of its climate, he quickly realised that it was possible for his countrymen to settle in this new land.

Land

Look at the map of Australia showing physical features. We

can divide Australia into three major physical divisions. They are the Western Plateau, the Central Lowlands and the Eastern Highlands.

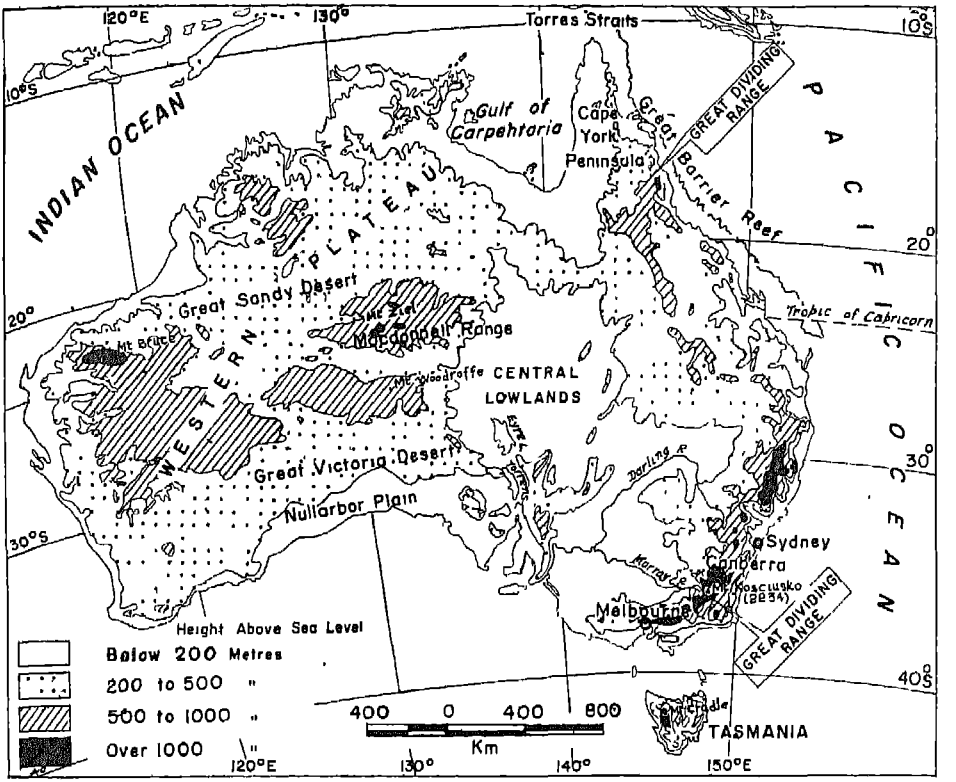


FIG. 16 *Physical Features of Australia*
Note that Australia has the most level surface of all the continents. Which part of Australia do you think must be very useful for agriculture?

The Western Plateau: The western part of Australia is a vast plateau. It occupies nearly two-thirds of the continent. In places,

isolated mountain ranges rise above the general level. Much of the plateau is a desert or a semi-desert. Mostly it is flat and is covered with small shrubs.

The plateau is made up of old rock like that of the Deccan Plateau in India. It is rich in minerals, especially gold.

The Central Lowlands: In between the Western Plateau and the Eastern Highlands lies a great belt of lowlying area. It extends from the Gulf of Carpentaria in the north, across the continent to the southern shores of Australia.

It consists of a few drainage basins. The average elevation of the region is less than 150 metres. At Lake Eyre it is 12 metres below sea level.

The Murray and the Darling are the major rivers of Australia flowing through the Central Lowlands. Not all the rivers flowing through this lowland are able to reach the sea. Most of them fall into the inland lakes. Thus a great part of the Central Lowland around Lake Eyre is a region of inland drainage.

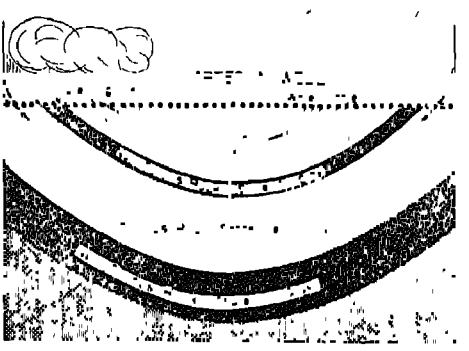


FIG. 17. *Artesian Well*
Note how rain-water seeps underground through porous rocks and gets collected in deep rock basins underground. What makes this water rush up with a great force through artesian bores? Note the layers of different kinds of rocks and the high head of the underground water.

Owing to scanty rains much of the lowland is very dry. Fortunately, some water is obtained from the *artesian wells*. These wells are dug deep into the earth. Water from these deep wells flows out continuously and automatically.

The Eastern Highlands: The Eastern Highlands lie nearly parallel to the east coast of Australia. They extend from Cape York Peninsula in the north to Tasmania in the south. They form a long belt of elevated plateaus and are known as the Great Dividing Range. In the north, they are broad but not very high. In the south, they are narrow and high. Mt. Kosciusko with a height of 2,234 metres is the highest peak in Australia. In this region some peaks are covered with snow in winter.

These highlands drop steeply in the east towards the Pacific Ocean and more gently in the west towards the Central Lowlands.

IV *Corals in the Hands of Collectors*
Look at the beautiful shells and corals picked up by these persons. These corals are from the Great Barrier Reef of Australia. The coral formations are indeed numberless in shape, size and colour. How are corals formed?

Most of the rivers of Australia rise in the Eastern Highlands. Those flowing towards the east are short and swift. Their valleys form

useful routes to the interior. These valleys are used by the railways.

Off the north-east coast of Australia extends a very long ridge-like feature known as the Great Barrier Reef. This world famous reef is more than 1,900 kilometres in length and its distance from the coast varies from 30 to 240 kilometres. The reef has been formed as a result of the deposition of skeletons of corals or tiny polyps. Corals are tiny sea animals that live in colonies. The corals do not move about, but remain fastened to the rocky sea floors of warm, clear, shallow waters in the tropical regions. When the corals die their hard skeletons remain fixed in place and new corals grow up on them. These large accumulations of skeletons of corals are known as *coral reefs*. The coral reefs resemble limestone rocks. The reefs are built up just below the water surface. Their jagged surfaces are a great danger to shipping, and many a ship has sunk off the coast of Queensland after running aground on a reef. On the other hand, smaller ships or boats often seek shelter during a storm in the quieter channels between the mainland and the reef.

Climate

As Australia lies in the Southern Hemisphere, the seasons of Australia are opposite to those of the Northern Hemisphere. For example, when we have summer in India it is winter in Australia. Can you recall why?

Unlike our country, it is the northern part of Australia which is hotter than its southern part. Why should it be so?

The greater part of Australia lies within the belt of trade winds. Coming from the Pacific Ocean these south-eastern trade winds blow all the year round. They bring heavy rains to the eastern coast of Australia.

The Eastern Highlands act as a great barrier to these rain-bearing trade winds. The rainfall, therefore, decreases considerably towards the west. Very large parts of central and western Australia have scanty or no rain at all. Thus a hot desert type of climate is found in the vast interior of Australia.

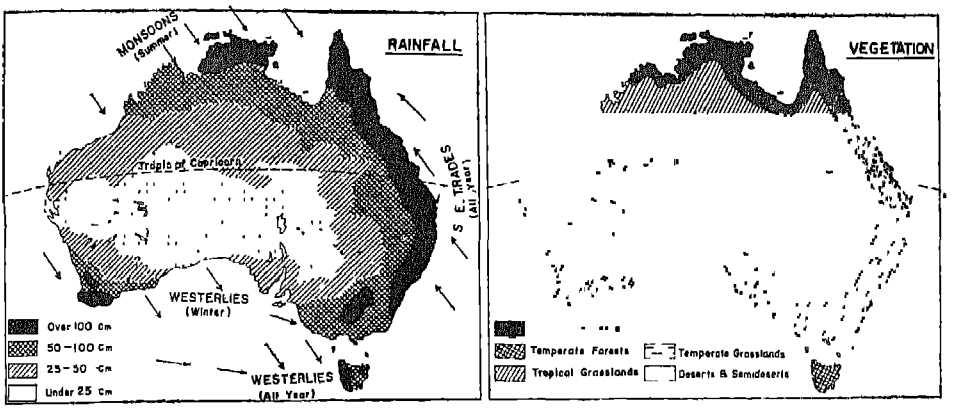


FIG. 18. *Australia—Annual Rainfall and Natural Vegetation*
Note the relationship between the amount of rainfall and the type of vegetation.

The southern coast of Australia enjoys the Mediterranean type of climate. What is the characteristic feature of this type of climate? The island of Tasmania receives plenty of rain from the westerlies throughout the year.

The northern part of Australia receives monsoon rains in summer. This region is cool and dry in winter and warm and wet in summer.

Vegetation

It is believed that the Australian continent remained isolated from the rest of the world for a very long time. As a result, vegetation

and animals of Australia are quite different from those found in other parts of the world.

The most common trees in Australian forests are eucalyptus. They are evergreen trees and are commonly called gum trees. Some kinds of eucalyptus trees are very high while some are no taller than a man. Some of their types such as *jarrah* and *karri* trees are valuable for their timber. Some types yield eucalyptus oil. Another common tree of Australia is wattle. It is a tall tree. In summer it bears golden flowers.

The distribution of natural vegetation is controlled by the amount of rainfall. Forests are found near the coast where rainfall is heavy. In the drier interior are found the grasslands and scrub-lands.

Look at the map of Australia showing natural vegetation. The north-eastern coastal region is a forested land. In these forests trees like palms, bamboos, birch, and cedar grow luxuriantly. The temperate forests are found in Tasmania and in the south-eastern and south-western parts of Australia. The trees of these forests are mainly eucalyptus.

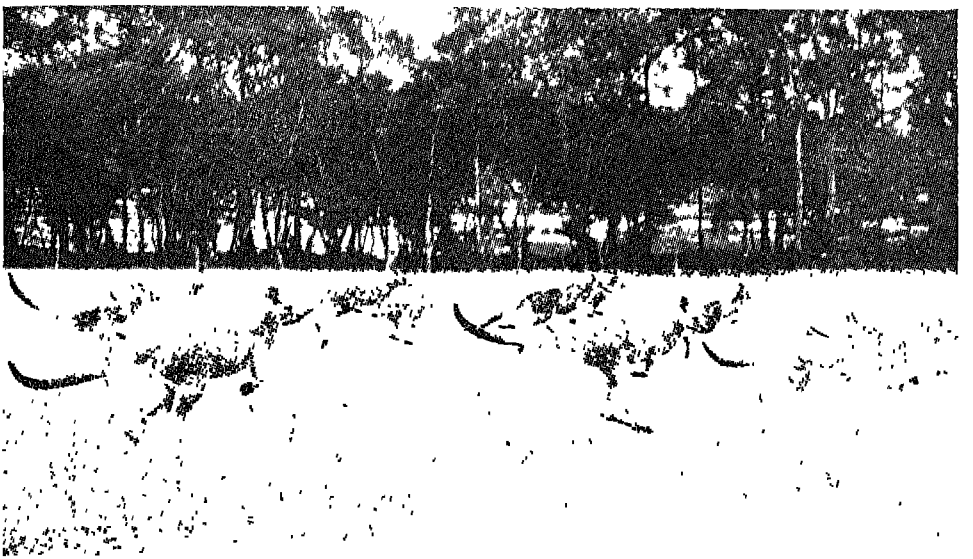
In the interior, where the rainfall decreases, the forests give place to parklands or woodlands comprising trees and grasses. The park-lands in turn merge into grasslands where the typical plant is mulga. The grasslands in Australia are of two types—the tropical grasslands or savanna and the temperate grasslands or Darling Downs. Tropical grasslands are found in the north and the temperate grasslands in the Murray-Darling Basin in the south.

The vegetation of semi-arid regions consists mainly of malee, salt-bush and mulga plants. Cactus and spinifex, a kind of thorny grass plant, belong to the most arid parts of the desert.

Animals

The native animals of Australia are also very much different from those of the other parts of the world. The most ancient types of animals are still found in Australia.

Many of the animals are *marsupials*. These animals have pouch-like fold of skin near the stomach in which they can carry their young ones. The kangaroo and wallaby are well-known examples of marsupials.



V *The Kangaroos on the Move*
Australia is known for its Kangaroos. These strange and shy animals jump when they walk and sit when they stand up! Why are they called marsupial animals?

The kangaroo has a long tail which is used as a support when it sits. When it runs with great speed its thick tail helps it to maintain its balance. It has small forelegs which it uses as hands. It

lives on grass and leaves of trees. The kangaroo has become symbolic of Australia.

Another popular animal in Australia is koala. With a flat black nose it looks like a teddy bear. It lives in trees. Koalas are active during nights and spend the day time in dosing or sleeping. They grow to about two feet. Koala is also a marsupial. It feeds on leaves of eucalyptus trees.

Dingo is a wild dog. It is believed to have been introduced in Australia by the aborigines from Asia.

The strangest animal in the world is the platypus known as duck bill. It is an animal-bird that swims under water, walks on the ground and digs tunnel under the ground. The platypus is a four-legged animal that lays eggs. It has the bill of a duck, a tail of a beaver and hairy skin of a mammal. Animals that suckle their young ones are known as *mammals*.

The emu, kookaburra and lyrebird are some of the strange birds of Australia.

The emu is a big-sized bird. It is about two metres tall. It cannot fly but can run fast like an ostrich of Africa.

The kookaburra is the best known of Australian birds. It is called the "laughing Jack-ass" because of its peculiar laugh-like call.

The lyrebird is one of the world's most beautiful birds. It is a great mimic. It imitates the songs of other birds. It can even imitate the bark of a dog and toot of a passing car. It is a shy bird and lives in the deep forests.

Political Map of Australia

Look at Fig. 21, the country has been divided into self-governing states and centrally administered territories. Which is

the largest state of Australia? Which is the island state? Name the national capital of Australia. Note the capital city of each state from the map.

THE NEW TERMS YOU HAVE LEARNT. *Artesian Well*—A well in which water rises automatically to the ground surface, either through a natural or man-made hole *Marsupials*—A group of animals in which the females carry their young ones in a pouch or a kind of pocket near their stomach. *Corals*—A variety of sea organisms or tiny polyps that live in colonies attached to the shallow ocean floors in the tropical belts When they die, their skeletons form hard coral rocks.

EXERCISES

Review Questions

1. Answer the following questions:
   (i) Which are the three physical divisions of Australia?
   (ii) Which parts of Australia get plentiful rains?
   (iii) Which is the largest river of Australia?

2. Give one term for each of the following.
   (i) A parallel of latitude drawn at an angular distance of $23\frac{1}{2}°$ from the equator to its south.
   (ii) A group of animals in which the mothers have a pouch to carry their young ones.
   (iii) A well which gives an automatic and continuous flow of water.
   (iv) Animals which suckle their young ones.

3. Make out correct pairs from the two columns:

(a)	The most common tree of the Australian forests	(i)	Cactus
(b)	A valuable tree which yields timber that is used for railway sleepers	(ii)	Bottle tree
		(iii)	Jarrah
(c)	A tall tree bearing golden flowers in summer	(iv)	Wattle
(d)	A thorny plant of the desert region	(v)	Eucalyptus

4. Describe the physical features of Australia giving a brief account of its plateau, lowlands and rivers.

5. Give a brief account of vegetation and animals of Australia

Picture Reading

6. Look at the photograph V and say if you would call it an open parkland. If so, why?

Map Work

7. In an outline map of Australia show the following:
   (i) Sydney, Canberra, the Murray and Darling rivers, the Lake Eyre and the Tropic of Capricorn
   (ii) Regions receiving winter rains and those getting the monsoon rains.

Topic for Class Discussion

8. '*Plant and Animal Life in Australia*'

   Let the class collect information and pictures of the various native trees, animals and birds of Australia. They may then organize a class exhibition of the pictures thus collected. Every picture should carry a proper label and its description.

7

Agriculture and Industries

THE TERMS YOU ALREADY KNOW: *Pastoral Farming*—Practice of breeding and rearing certain herbivorous animals for their milk, meat, wool or skin. *Undulating Land*—A land which is alternately up and down like the waves. *Reservoir*—A large artificial lake, created by building a dam across a valley, for storing a reserve supply of water for irrigation and other purposes.

AUSTRALIA is an important producer and exporter of agricultural products. It is the largest producer and exporter of wool in the world and is one of the major suppliers of wheat, dairy products, meat, sugar and fruits. About 95 per cent of the wool and more than one-third of its other important agricultural products are exported every year. Of late, it has made a great progress in manufacturing industries.

Agriculture

Agriculture is the practice of cultivating the soil in order to produce crops. Like India, Australia has been mainly an agricultural country. Some parts of Australia are fertile; but its rainfall is neither adequate nor reliable. Murray-Darling is the only important river system of Australia. Most of its tributaries go dry in summer.

The water resources of Australia are, therefore, very scanty for its size. Australia, however, is lucky to have large underground water supplies in several parts. But this underground water being brackish is unsuitable for irrigating crops.

Australia has only four per cent of its land under cultivation.

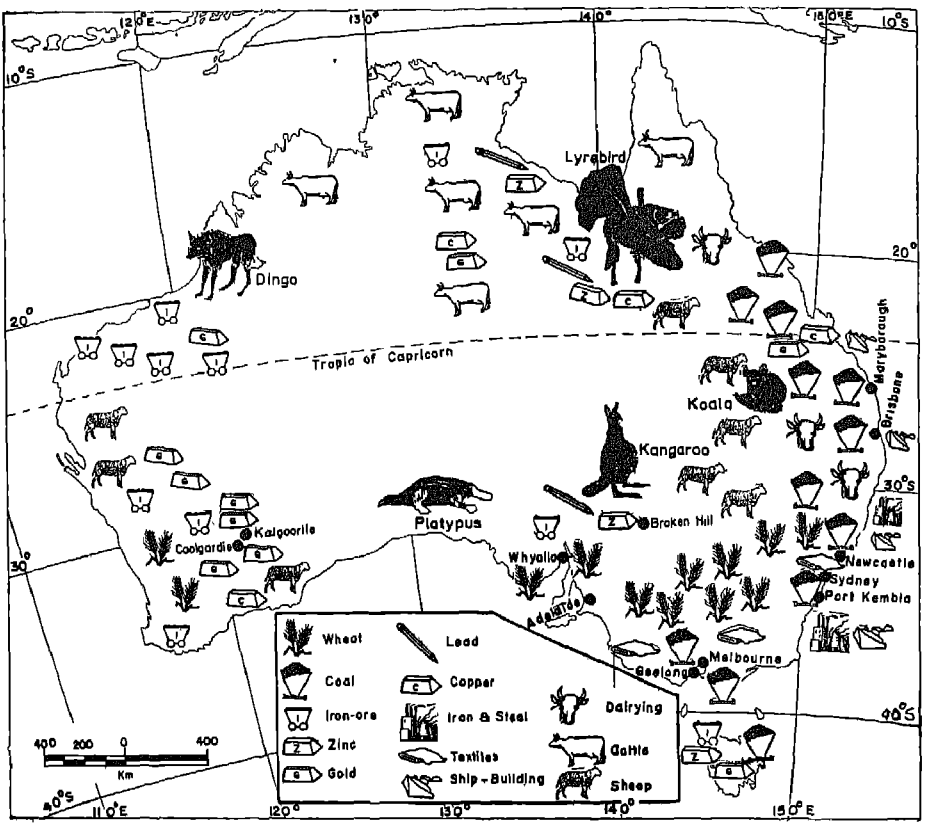
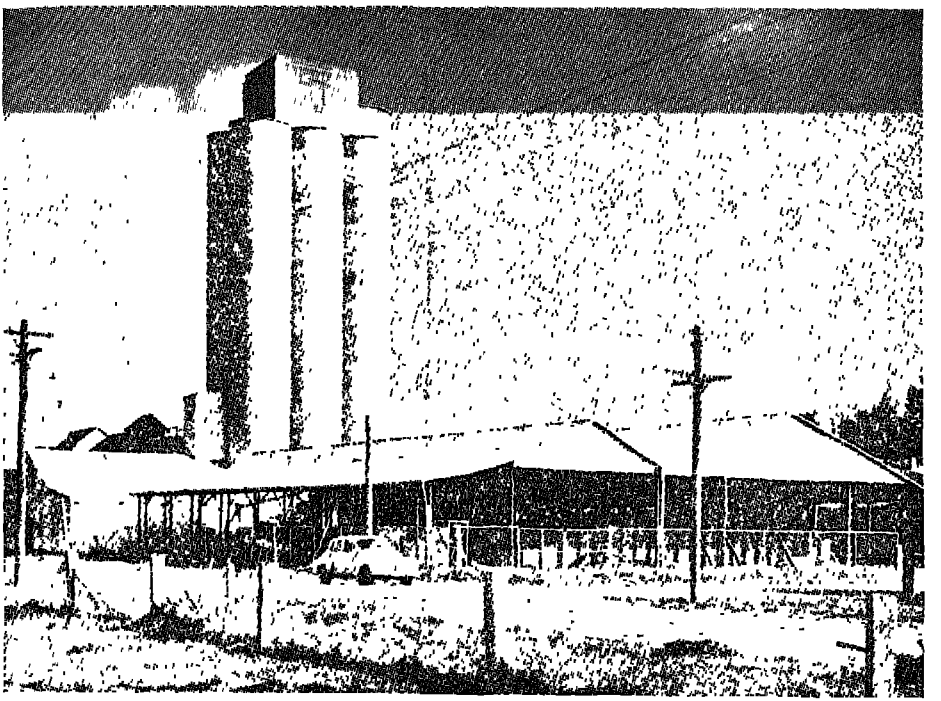


FIG 19 *Australia—Crops, Minerals and Industries*
Note the crops, minerals and industries of Australia Where are most of the minerals found and industries located in Australia?

Chief areas where agriculture is carried on are the south-east and south-west parts of Australia and eastern coastal strip. These regions have adequate supply of water.

In the regions where rainfall is not sufficient, farmers have to depend upon irrigation. Australia has constructed a series of dams across its big rivers. Do you know what is a dam and how it prevents floods?

In Australia the land which is under cultivation is mostly level



VI. *Wheat Silos in Australia*
Look at the silos or airtight chambers meant for storing the bulk supply of wheat in Australia. These silos may contain more than 50,000 tons of wheat. How tall are the silos?

or gently undulating. This favours the use of machinery. Farms are very large and on most of them work is done with machines. This is also necessary because the population of Australia is very low.

Wheat is the most important crop of Australia. It was introduced in Australia by the white settlers. Nearly half of its cultivated land is under wheat. New South Wales and Western Australia are the chief wheat growing states. It exports wheat in a large quantity. Barley, oats and maize are the other cereals of less importance. Rice is grown in the most favoured irrigated areas. Sugar-cane, tobacco and cotton are also grown mainly in Queensland.

VII *Sugar-cane Ready for Harvesting*
This is a sugar-cane farm in Queensland, Australia. Note how tall are the sugar-cane plants. Australia's total production of sugar is nearly two-thirds that of India. What makes Australia one of the major exporters of sugar?

Australia grows a variety of fruits. It grows pineapples, bananas and papaya in the tropical zone and apples, pears, oranges and grapes in the cooler areas of the temperate zone.

Sheep-Rearing

Australia has the greatest number of sheep in the world. It produces about one-third of the world's wool. In Australia, sheep is mainly reared for wool. They can survive on scanty grass and even on salt-bush. They are best suited to these dry pastures. Sheep thrive well in the temperate parts of Australia where the rainfall is between 20 and 40 centimetres.

The New South Wales is the most important state for sheep-rearing. Victoria and Queensland take the second and the third place in the number of sheep. The best sheep lands are the lands between the rivers Murray and Darling.

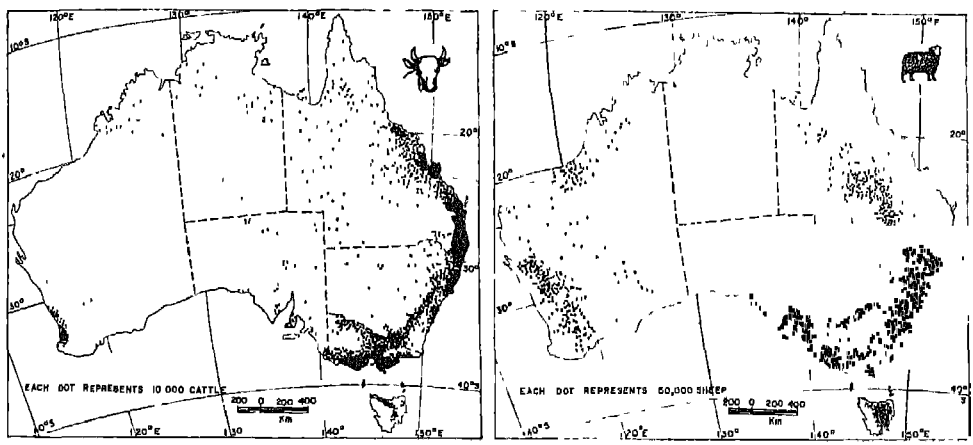
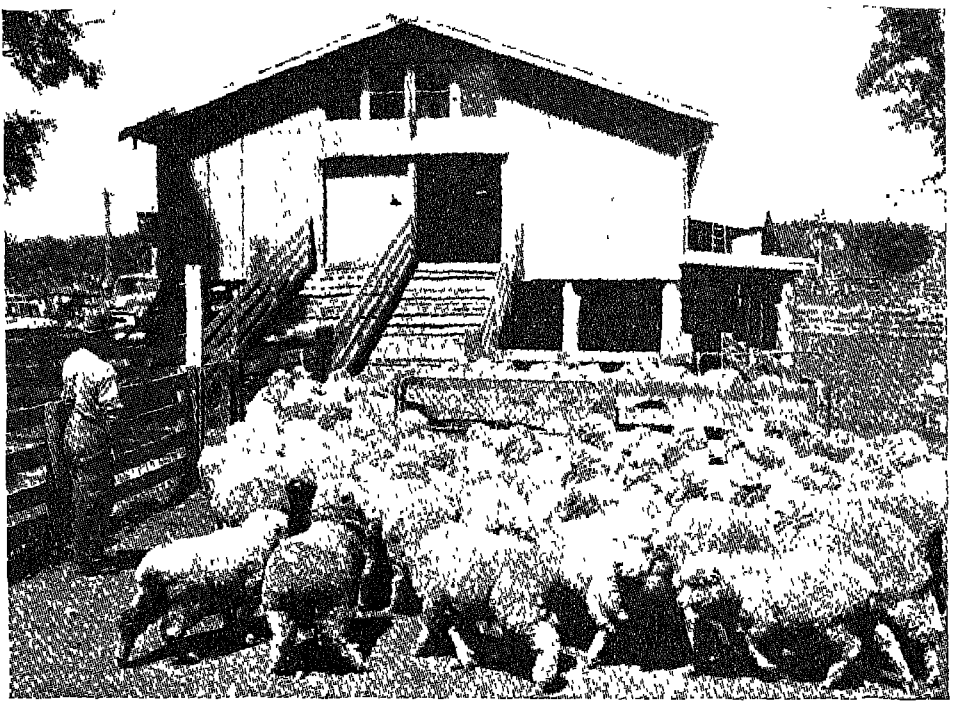


FIG 20. *Australia—Distribution of Cattle and Sheep*
Note that the important cattle lands are in the region of higher rainfall. Why are sheep reared in regions of lower rainfall?

The most common sheep in Australia is Merino. They are hardy and free from disease. Merino sheep produces best wool. The wooly coat of sheep known as *fleece,* consists of great many number of tiny fibres. These fibres are very fine. One fibre of wool may be as much as half a metre long. The average fleece of one sheep weighs about four kilogrammes.

Sheep Farms: In Australia sheep are reared on very large farms known as *sheep stations.* They are run by a family with the help of a



VIII. *Sheep at a Woolshed Yard*
These merino sheep are being taken to the woolshed for clipping their wool. Look at the thick coats of fine wool for which the merino are so well known.

few labourers. These paid workers are known as 'Jackaroos'. They herd the flocks of sheep, attend to their injuries and mend fences to protect the sheep from the dingo, the wild dog; and to keep away the rabbits as they are a great menace to the proper growth of pastures.

A sheep station is generally spread over several square kilometres. It is divided into a number of open grasslands known as *paddocks*. In each paddock there are about two to three thousand sheep. They are looked after by a shepherd or two. A flock of sheep is driven with the help of dogs from one paddock to another when grass and water become scarce.

The house of the owner of a sheep station is known as 'Homestead'. It has a verandah on three sides. The house has a roof of corrugated iron. The farmer has to think a great deal about water. There is a windmill that pumps water from the well. There are small houses for the workers and several small sheds where shearing is done. This group of buildings looks like a small village. All workers are white people. Tea is a popular drink on these farms.

The shearing season is the busiest season. At this time extra men are employed. Expert teams of shearers go from station to station. Shearing is done from May to January. A good shearer using machine clippers can shear two hundred sheep in a day. The fleece is graded and pressed into bales. The bales are taken in a big wagon, or giant motor trucks to wool markets for sale. From these it is taken to ports for export.

In Tasmania sheep are bred for meat as well as for wool. There is now-a-days a rise in the export of frozen mutton from Australia.

Cattle-Rearing

In Australia there are large herds of cattle in every State. They are reared partly for dairy produce like milk and butter and partly for their meat. The finest beef producing cattle is reared on the grasslands of Queensland and the Northern Territory. These States are known as the great cattle States of Australia. Nearly one-third of the beef produced is exported.

There are some difficulties in rearing cattle in the tropical grasslands. The land is dry during the major part of the year. Many of the rivers and streams go dry and artesian wells have to be sunk to get water. Moreover, cattle must be taken over long distances to the markets, slaughter-houses and to the ports of export. Shortage of men to look after the cattle is a problem. Most of these difficulties are now being overcome. Hardy type of cows are bred. Quick means of transport are provided. Aborigines are employed as stock-men.

The chief areas where dairy farming is done are in the east and south-eastern parts of Australia especially in the coastal areas of Victoria, New South Wales, and southern Queensland. These regions have temperate climate with sufficient rain to make the grass grow rich enough. Most of the surplus milk is made into butter and cheese in co-operative factories. About half of the butter produced in the country is exported.

Minerals and Industries

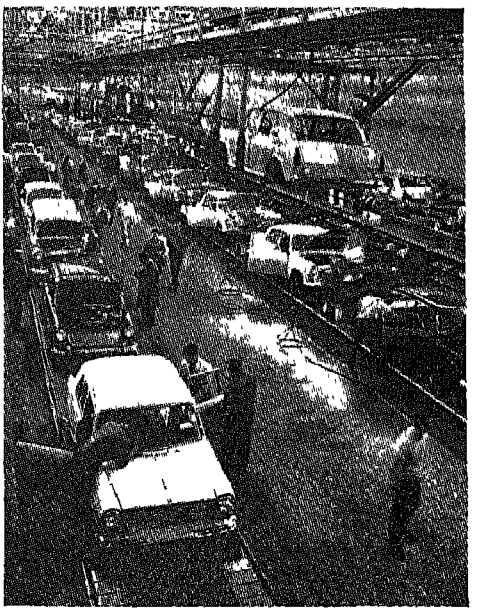
Australia has a considerable mineral wealth. The discovery of gold in the last century brought the first great rush of settlers to this new land. Australia still produces a fairly good amount of gold.

Coal is the most important mineral wealth of Australia.

Australia possesses the largest reserves of coal among the southern continents. The coal industry alone contributes about one-third of the country's total value of mineral production. New South Wales is the chief coal producing state.

Australia is self-sufficient in iron-ore. It is now in a position to export large quantity of iron-ore, especially to Japan. South Australia and Western Australia possess the main iron-ore deposits of the country.

Australia is very rich in lead and zinc. Australia leads the world in the production of lead and stands fourth in the production of zinc.



IX *Motor Cars on an Assembly Line*
See how cars stand and move in a line in an automobile factory near Sydney Also note how different parts are being assembled into a car. Can you now explain what an assembly line is?

Other minerals of economic importance are copper, tin and bauxite. Recently at several places petroleum and natural gas have been discovered.

Although Australia is often considered as an agricultural country, more than a quarter of its people now work in factories. As a result Australia has now become one of the important industrialized countries of the world. Australian steel is said to be the cheapest in the world. Now Australia has been giving more emphasis on the making of heavy machinery. Its important manufactures are agricultural machinery, motor vehicles, electrical plants, chemicals, paper, ships, machine tools and refined oil. Australia makes several products from its agricultural and animal raw materials. They are cotton and woollen textiles, sugar, condensed and powdered milk, butter, cheese, tinned fruits and meat. Most of the manufacturing industries are located mainly in Victoria and New South Wales. Find out from the map the important centres of industries.

THE NEW TERMS YOU HAVE LEARNT *Agriculture*—The practice of cultivating the soil in order to produce crops *Sheep Station*—Very large farms where sheep are reared mainly for wool. *Paddock*—An open fenced grassland in a sheep station.

EXERCISES

Review Questions

1. Answer the following questions·
   (i) Which is the most important state for sheep-rearing?
   (ii) Name the mineral in which Australia leads the world.
   (iii) What makes Australian farms to be worked easily by machines?
   (iv) Name the states of Australia where major manufacturing industries are located.

2 Complete the following statement with the most appropriate ending:
Australia has a very small percentage of its total land under cultivation because
   (i) most of its land is mountainous and unsuitable for cultivation.
   (ii) the country has small population and it prefers to live in towns.
   (iii) here sheep-rearing is more paying than growing of crops
   (iv) the greater part of its land is very poor in water resources.

3. What factors are responsible for the development of sheep-rearing in Australia?

4. Write a brief account of a sheep station, pointing out how various difficulties are overcome by the Australian farmer

Picture Reading

5. Study the photographs VI, VII, VIII and IX. Which are the three major industries they refer to? Of the three which one is most wide-spread?

Map Work

6. On an outline map of Australia show the location of important towns and ports along with their industries. (Use picture symbols for each kind of industry)

Topic for Class Discussion

7. *'Farming in Australia versus Farming in India'*

Collect as much information as you can about the farming practices in the two countries, and point out how they differ from each other.

8

People and Means of Transport

THE TERMS YOU ALREADY KNOW: *Aborigines*—The human inhabitants who are believed to have been the original natives of a region. *Average Density of Population*— The number of people that can be found in a unit area assuming that the total population is uniformally distributed in a given region.

IN area Australia is more than twice the size of India; but its population is very small as compared to that of India. Its total population is about 11.5 million which is nearly the same as that of the combined population of the three leading cities of India—Bombay, Calcutta and Delhi. Australia is the most thinly populated continent in the world. Its average density of population is just one person per square kilometre.

Look at the population map of Australia. You will notice that the population is not evenly distributed. Much of the interior of Australia is very thinly populated. Can you give reasons for this? It is concentrated mostly in the eastern coastal lowlands, and south-eastern parts of the continent. Which States are more thickly populated?

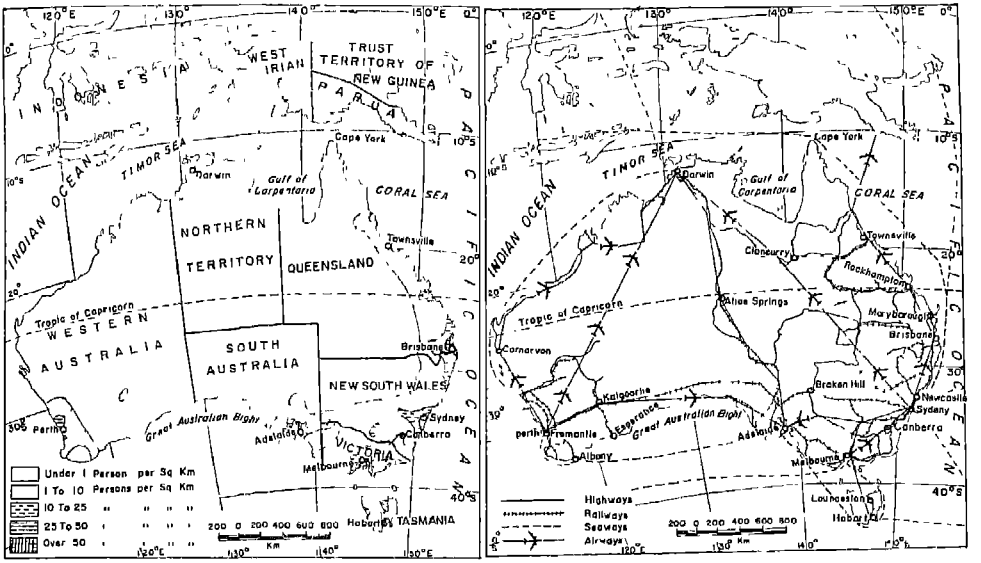


FIG 21. *Australia—Political Divisions, Population and Transport*
Note the straight boundaries between most of the states Can you give reason for the same? Why is population mostly concentrated in the eastern coastal areas?

It is very interesting to note that though Australia is mainly an agricultural and pastoral country, most of the Australians live in towns. Nearly sixty per cent of its people live in the eight capital cities. Can you name these cities? Sydney the largest city in Australia has a population of more than 2.4 million. Melbourne which is next in importance to Sydney has a population little over two million.

The two most thickly populated States of Australia are New South Wales and Victoria. They lie in temperate zone and receive a fairly good amount of rainfall. Queensland lies in tropical and subtropical belts and comes next in population. Moreover these

three States were the first to be colonized by the white settlers.

How Australia was Settled: Australia has been settled during the last two hundred years only, mainly by the British people. Such a process of settling on a new undeveloped land is called *colonization.*

The first settlement was founded near Sydney in 1788. The first settlers were a batch of British prisoners. They were sent here by the British Government as they had lost their American colonies. Wheat was grown by the prisoners to feed themselves and sheep were introduced shortly afterwards from South Africa. For another fifty years several settlements of convicts were founded in Tasmania and Queensland.

Soon new settlers began to arrive of their free will and their number increased steadily. The settlers or colonists from the east coast succeeded in crossing the Blue Mountains and came to the vast grasslands on the west side of the mountains.

In 1851 there was a discovery of gold in New South Wales at Bathurst. It was followed by rich finds at Ballarat and Bendigo in Victoria. This caused great rush of settlers and the population trebled within ten years. In 1862, new gold fields were found at Coolgardie and in the following year at Kalgoorlie in Western Australia. This brought another wave of settlers.

Australia even today needs more and more people to work on farms, sheep stations and industries. Population has been steadily increasing during the last few years.

The Native People of Australia: Before the first white settlers came to Australia it was inhabited by the aborigines. They were called "Black Fellows" by the white settlers. Today, their number is about a hundred thousand only.

Originally the aborigines lived all over Australia and Tasmania. The white settlers, however, slowly drove them to the northern and western parts of Australia and to nearby small islands. They have now to live in the areas reserved for them. Such areas are known as *reserves*. These reserves are mainly in the Northern Territory, Queensland and Western Australia.

These aborigines are dark coloured and live chiefly by hunting kangaroos and by fishing. They use simple weapons like long spears and boomerangs. A boomerang is a curved sharp stick and if thrown skilfully, it returns to the thrower.

Today Australia is occupied by the white people and a very small number of aborigines. By law only white people are allowed to settle permanently in this newly discovered continent. This policy of the Australian Government which does not permit coloured people to settle permanently in Australia is known as the *White Australia Policy*.

Trade

Note from the map that all the state capitals in Australia are port cities. The rapid growth of Sydney and Melbourne is related mainly to their importance in trade. Australia stands first in the export of wool. It accounts for about half the wool that enters world trade. Its other main exports are wheat, dairy products, beef and mutton, machinery and minerals. Its main imports are machinery, transport equipments, textile goods, petroleum and petroleum products.

Transport

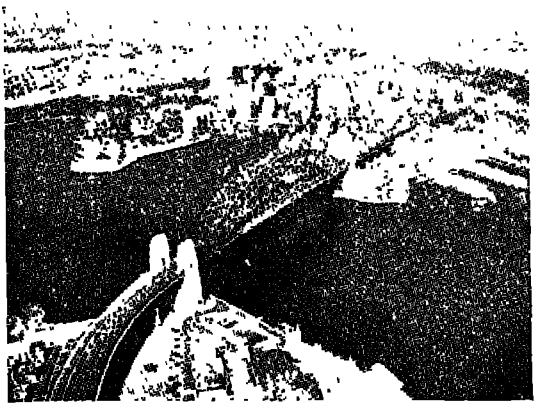
Railways: Railways are the most important means of transport in Australia. The capital cities of the states in the mainland of

Australia are connected by railways. Study the railway lines of Australia from the map. What do you notice? The only Trans-Australian Railway is between Sydney and Perth. Which other important cities lie on this route? The journey is of nearly 4,000 kilometres and takes several days to complete it.

Roads · Good roads connect all capital cities and important towns of Australia. The major roads in Australia are called commonwealth highways. They are like the National Highways in India. They run parallel to most of the important railways.

Air Routes: Australia is a continent of great distances. Air transport, therefore, has been of great importance for reaching the distant sheep farms and other farming settlements and scattered towns and cities. All capital cities and important industrial centres are linked by airways. Aeroplanes are used very frequently for carrying both passengers and goods. There are also regular air services between Australia and important countries of the world.

One interesting feature of the air transport in Australia is the air ambulance system. It is not possible to maintain a separate



X. *Sydney Bridge*
Look at the giant iron bridge which spans Sydney-harbour. See the platforms jutting into deep waters. They are called wharves. What are they meant for?

doctor for each of the settlements as they are scattered. There are air ambulance bases in each state from where doctors are flown to settlements where they are urgently required. To make this service more useful the station homesteads are supplied with wireless receiving and transmitting sets.

Sea-Routes: All important ports of Australia are linked by sea-routes which connect them with important ports of other countries. Coastal shipping is also very important. There are regular steamship services between the important ports. Sydney is the largest city and first class seaport of Australia. It is the capital of New South Wales and major exporting port of the country. It is connected with all the important towns of Australia by railways and roads. Melbourne is the capital of Victoria and a great industrial centre. It is second only to Sydney in importance The remaining all state capitals are also good sea ports.

THE NEW TERMS YOU HAVE LEARNT: *Transcontinental Railways*— Railways running from one end of the continent to the other. *White Australia Policy*— Policy of permitting only white people to settle permanently in Australia *Colonization*— Process of establishing permanent settlements by groups of settlers in a territory usually undeveloped and thinly populated.

EXERCISES

Review Questions

1. Answer the following questions:
   (i) What caused a great rush of settlers in Australia?
   (ii) Why is air transport of great importance in Australia?
   (iii) Name the three important exports of Australia.

2. Distinguish between
   (i) A port and a harbour
   (ii) Population and average density of population.

3 Make out the correct pairs from the two columns:

(a)	The largest city and the port of Australia	(i)	Kalgoorlie
(b)	The federal capital of Australia	(ii)	Melbourne
(c)	The capital of the island state of Australia	(iii)	Hobart
(d)	A great industrial centre of Victoria	(iv)	Darwin
(e)	A town in Western Australia famous for its gold mines	(v)	Sydney
		(vi)	Canberra

4. Which parts of Australia are very densely populated? Why are they so?

Picture Reading

5. Study the photograph X carefully and state what makes Sydney the most important port of Australia

Map Work

6. On an outline map of Australia show important railways, roads and the major sea-routes radiating from its ports Paste on the sea-routes, pictures of goods moving along them.

Topic for Class Discussion

7. '*Discovery of Australia*'

   Collect information on this topic and tell the class the story of Captain James Cook.

9

Australia's Neighbour in the Pacific

THE TERMS YOU ALREADY KNOW *Hot Spring*—A natural stream of hot water flowing continuously. It usually occurs in the region of volcanic activity *Volcanic Mountain*—A conical hill or mountain composed of materials discharged, from an opening at its top, during periods of activity. *Mixed Farming*—Combination, on the same farm, of cultivation of crops and rearing of animals for their milk and meat.

NEW Zealand is an island country like Japan. It is a land of mountains and lakes. Of equal interest are its forests and pastures. New Zealand lies at a distance of about 2,000 kilometres to the south-east of Australia.

New Zealand consists of two main islands. They are the North Island and the South Island, which are separated by the narrow Cook Strait. The area of New Zealand is slightly less than that of Andhra Pradesh. Find from the map the latitude and longitude between which the main islands are situated.

Physical Features

New Zealand is a land of mountains. They lend scenic beauty to the whole country. A chain of mountains runs through

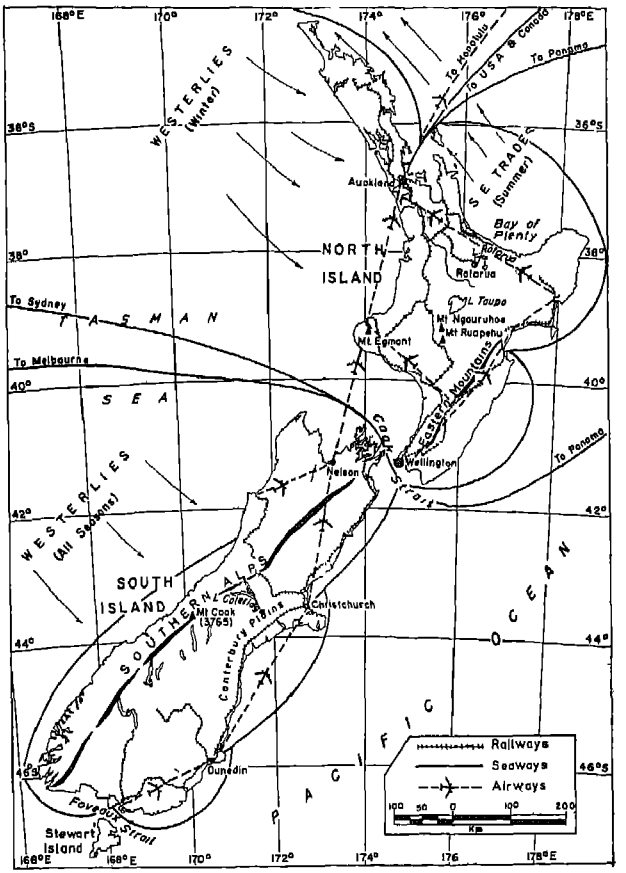


FIG 22 *New Zealand—Physical Features and Transport*
Compare the relief of the two main islands Note the latitudes of New Zealand How do these two help to explain the main difference between the climates of New Zealand and Australia?

the two main islands and forms the backbone of New Zealand. The main ranges in New Zealand run from south-west to north-east. In the South Island they are known as the Southern Alps and in the North Island, the Eastern Mountains.

In the South Island the Southern Alps is close to the western coast. It is higher and loftier than the Eastern Mountains. The

highest peak of the Southern Alps is Mount Cook which is 3,765 metres high above sea level. In this part, the peaks are permanently covered with snow. Therefore, large masses of snow and ice on the high ground move slowly downwards. They are often described as

XI *A Geyser in Action*
Look at this magnificent geyser in action in the Rotorua District, New Zealand It throws up columns of boiling water? Where from do they come?

rivers of snow and ice. Such rivers consisting of a mass of snow and ice that move slowly away from its place of accumulation are known as *glaciers*. New Zealand is famous for its glaciers, the largest among them being the Tasman Glacier. The Southern Alps rises steeply from the west coast and slopes gently towards the east. The

fertile lowlands of the Canterbury Plains lie to the east of these mountains.

In the North Island, to the west of the mountain chain lies a volcanic region. There are several high volcanic peaks in this region. Most of these volcanoes are dead or extinct but some of them are still active. In the south-west rises a perfect cone of Mount Egmont, an extinct volcano. Earthquakes are also frequent in this region.

The region north of Lake Taupo also shows signs of volcanic or thermal activity. There are hot springs, boiling mudpools and *geysers* which throw up columns of boiling water and steam at regular intervals. This region of the Rotorua District is, therefore, known as the *thermal valley*.

New Zealand has many small rivers but most of them are swift and not useful for navigation. Some of them are harnessed for developing water-power.

Climate

The temperate latitudes, the oceanic surroundings and the westerly winds make the climate of New Zealand cool, mild and pleasant. This type of equable climate with rainfall well distributed all through the year is usually experienced on islands of temperate region. It is known as *oceanic or maritime climate.* The rainfall is very heavy along the west coast of the South Island and moderate elsewhere.

Vegetation and Animals

Over the greater part of New Zealand, particularly where rainfall is heavy, forests grow with a dense undergrowth largely of ferns. In large areas, however, the trees have been cleared for farming. Forests consist mainly of pines, beech, giant tree ferns and

creepers. In the North Island tall *kauri* pines grow. They provide useful timber, gum and resins. Gum is used in manufacture of varnish and polish. Another native plant is New Zealand flax, found in swampy areas. It is a kind of hemp with large leaves. It yields fibre similar to flax, and is used for making strong ropes and nets.

On the drier slopes of the mountains grow the tussock grasses. They have now been largely replaced by pasture grasses. These grasses grow all the year round on which are fed the animals.

Before the white men appeared, New Zealand was very poor in animal life. Cattle, sheep and bees were introduced by the British people; and they increased rapidly. The kiwis and the penguin are the best known local birds of New Zealand. The kiwi is the national emblem of New Zealand. It cannot fly but it can run fast.

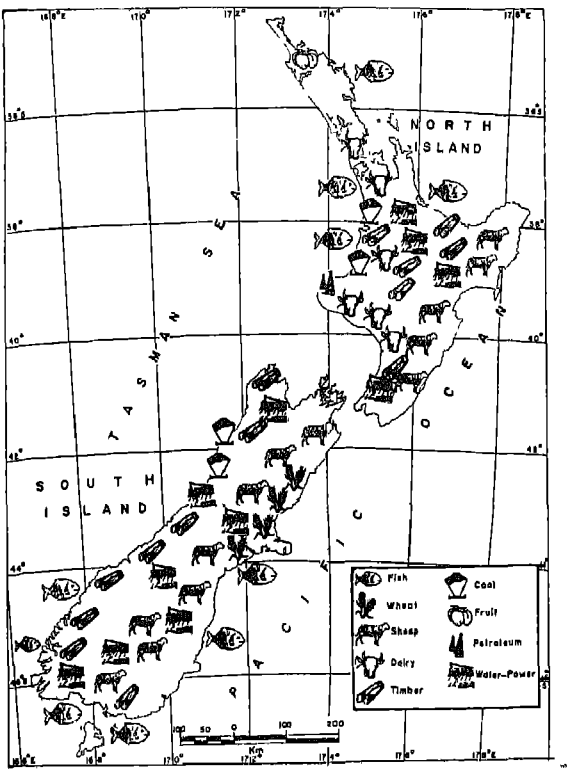
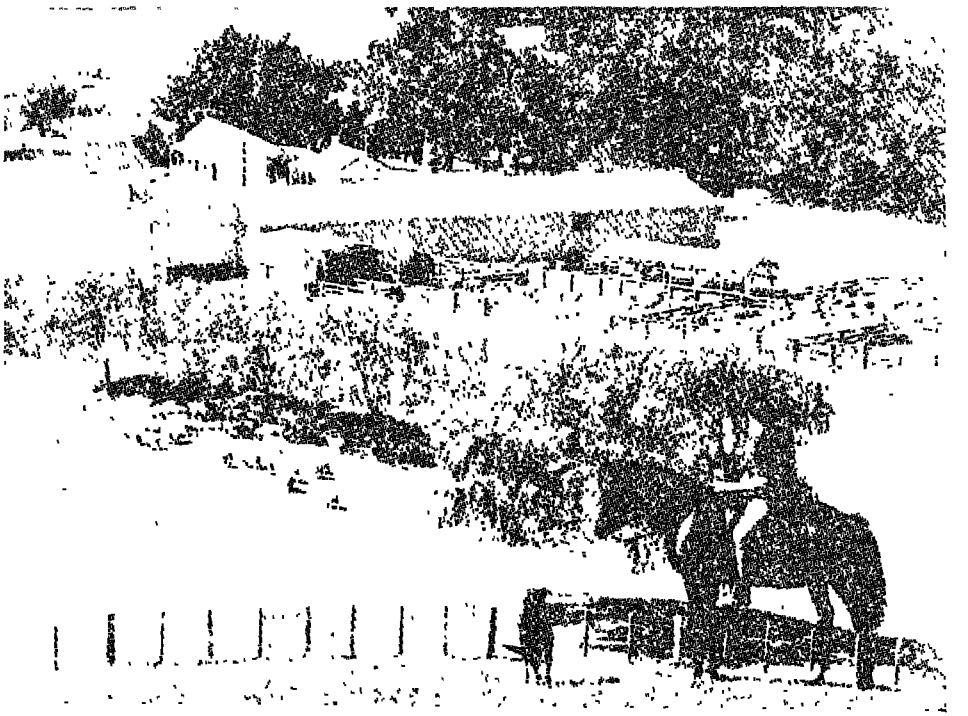


FIG. 23. *New Zealand—Crops, Minerals and Industries*

Note the crops, minerals and industries of New Zealand. What is the most important industry of New Zealand?

Agriculture and Industry

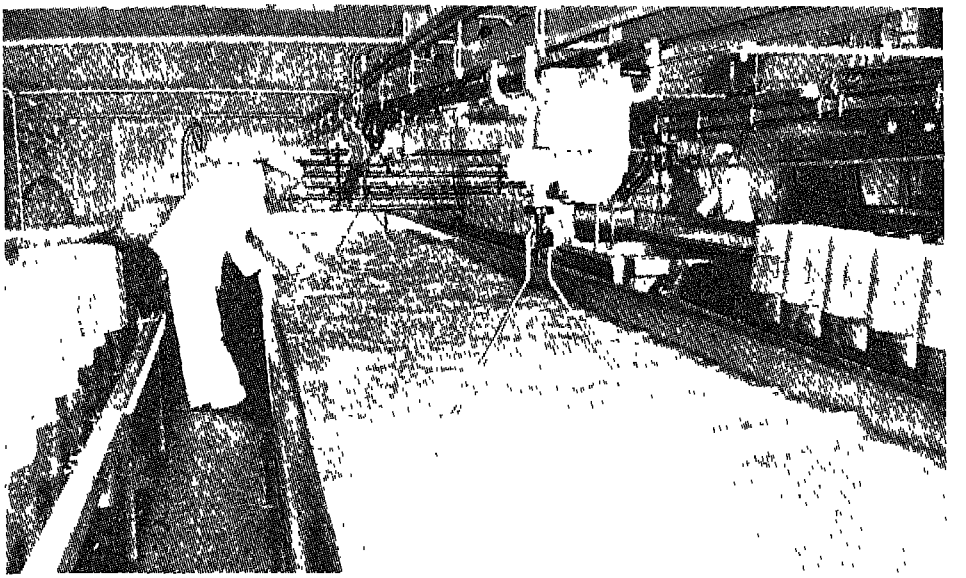
In New Zealand pastoral farming is more important than the growing of crops Nearly half of the land is under meadows and permanent pastures. Only about two and a half per cent of the land is under crops.



XII. *A Sheep Farm in New Zealand*
Look at the yards, woolshed, shearer's quarters and the farmer's homestead in the background In the foreground is the shepherd on horse back and his faithful dog looking after the sheep

Lowland areas, especially the Canterbury Plains on the east of the South Island are noted for mixed farming where besides

rearing of animals most of the crops are grown. The region produces a major portion of wheat, barley and oats of the country. This region, therefore, is very often called the 'granary' of New Zealand.



XIII *Cheese in the Making*
Look at the huge vat containing more than 2,600 gallons or 10,000 litres of milk Milk is being cooked and agitated during the cheese making process Note that the factory is owned and run by one of the farmers' co-operatives in New Zealand

By far the most important products of New Zealand are wool, butter, cheese, meat and lamb. They are all pastoral products. Its mild, moist climate enables both sheep and cattle to feed out of doors all the year round.

Sheep farms are evenly distributed between the North and South Islands. They are confined mainly to those undulating grasslands which receive less rainfall. Wool and the carcases of the

lambs are the major products of the sheep farms The carcases are exported to Europe as there are now cold ice chambers on ships.

The cattle lands are chiefly in the North Island. These lands receive rains throughout the year. This helps grass to be always juicy. Cattle are kept mainly for their milk. Machinery is used for milking and making cream from milk. There are co-operative factories. Some of these factories make cheese as well as butter. These two products are of great value to New Zealand as they are important items of exports.

XIV *Maori Stick Game in Progress*
A Maoris' party is giving a public performance of their popular stick game, involving high skill Note their costumes, make-up and beautiful wood carvings in the rear

Bee-keeping is quite important as the bees help the growth of clover by spreading the pollen. It is an important industry in the

North Island. Fish are caught round the coasts of New Zealand to provide for the local needs of the chief towns.

Coal is the most important mineral wealth of New Zealand. It is found at several places in both the islands.

Food processing is now an important industry of New Zealand. It also now manufactures transport equipments, footwear, textiles, paper, wood and cork products.

People and Transport

New Zealand's population is 2.6 million which is even less than that of Delhi. The average density of population is just 10 persons per square kilometre. Two-thirds of the people live in North Island and most of the New Zealanders are of British origin. More than half of the people of New Zealand live in cities. Auckland with a population of over half a million is the largest city of New Zealand. Wellington is the capital of the country and an important port. Christchurch and Dunedin are the important towns of the South Island.

Maoris are the native inhabitants of New Zealand. They are fine looking people with brown skins and black wavy hair. Unlike the Australian aborigines, the Maoris had a well developed culture of their own. They were good hunters and fishermen. They made nets and clothing from the New Zealand flax. They bravely fought against the white settlers and obtained their rights. Today they participate fully in the national life of New Zealand. Now there are about 2,00,000 Maoris. Major languages in New Zealand are English and Maori.

The mountainous nature of New Zealand has made the development of railways and roads difficult and very costly especially

in the South Island. Internal airways are of great importance because they provide speedy transport to passengers.

The main exports of New Zealand are wool, butter, cheese, powdered and condensed milk, meat, and lamb. Wool alone accounts for more than one-third of the total value of exports. Its chief imports are manufactured goods like machinery, motor cars, textiles and chemicals.

THE NEW TERMS YOU HAVE LEARNT: *Glacier*—A river of mass of snow and ice that moves slowly away from its place of accumulation. *Geyser*—A hot spring from which a column of hot water and steam is thrown high into the air at intervals. *Oceanic or Maritime Climate*—An equable climate with appreciable and evenly distributed rainfall usually experienced on islands and near the western coasts of the land-masses, within the zone of the westerlies

EXERCISES

Review Questions

1. Answer the following questions:
   (i) Which are the two main islands of New Zealand?
   (ii) What are the three factors which influence the climate of New Zealand?
   (iii) What is the name of the strait that separates the two main islands of New Zealand?
   (iv) Why is cattle-rearing very important in the North Island?

2. Distinguish between:
   (i) A hot spring and a geyser
   (ii) Pastoral farming and mixed farming

3. Give a single term for each of the following:
   (i) A volcano that has not erupted within historic times.
   (ii) Combination of cultivation of crops and rearing of animals for their products on the same farm

4. What factors have made New Zealand an important pastoral country?

Picture Reading

5. Study carefully the photograph XII and compare it with the photographs V, VI and VIII. What difference do you notice between grasslands of New Zealand and those of Australia? What difference do you notice between the climates of the two?

Map Work

6 On an outline map of New Zealand show the following
   (i) Areas producing wheat, milk and wool.
   (ii) Lake Taupo, Mt. Cook and Canterbury Plains.

Topic for Class Discussion

7. '*The Native Inhabitants of Australia and New Zealand*'.

   Collect information on this topic and compare the life they lived at the time of the landing of the white people in their lands See how you can account for their different ways of living.

UNIT THREE

South America: A Continent With Fast Growing Population

South America is one of the three Southern Continents. It is true that the continent is more than six times the size of India, and its population is hardly a third that of our country Nevertheless, it must be pointed out that its population has almost doubled in a period of only thirty years. In fact the continent now leads all others in the rapid growth of its population. Unlike the Australian continent the living standard of people in general is not high.

The Andes Mountains stand next only to the Himalayas in their average height. South America also contains some high and wide plateaus and extensive plains drained by big rivers.

Greater part of South America lies in the tropical zone. It has the world's largest hot-wet forests in the Amazon Basin. The continent also possesses very wide grasslands both in tropical and temperate regions.

Agriculture and animal-rearing are the two major activities of the people in the continent. The important crops of South America are wheat, maize, cotton, sugar-cane and coffee. Cattle are reared mainly for the meat, and sheep for their wool. It is fairly rich in minerals like petroleum, iron-ore, copper, tin and nitrate.

All the countries of South America are engaged in improving their agriculture and in setting up new industries. It is only through this that the people can raise their standard of living.

Brazil is one of the largest countries of the world possessing huge natural resources. It produces maize, rice, cotton, sugar-cane and cocoa on a large scale. It is the world's leading producer and exporter of coffee. The country has also very large deposits of iron-ore and manganese.

Argentina is mainly a grassland. It owes its importance to wheat and cattle. It is the largest exporter of beef.

10

Land and Climate

THE TERMS YOU ALREADY KNOW: *Civilization*—An advanced stage of civilized and social life. *Equatorial Rain-forest*—The thick evergreen forest, found in regions close to the equator, with heavy rainfall and high temperatures throughout the year *Land-locked Countries*—Countries which do not possess direct access to the sea.

LOOK at the globe; you will notice that the major part of South America lies in the Southern Hemisphere. You can note from the map in Fig. 24 that the continent stretches from 12°N to 55°S latitude and from 35°W to 81°W longitude. Name the oceans lying on the west and on the east of this continent. About two-thirds of the continent is within the tropics. The continent of South America is more than six times the size of India.

South America has a triangular shape, broader in the north and tapering towards the south. On a map the continent of South America looks like a leaf. Its tiny stem is the Isthmus of Panama, the only land connection between North and South Americas.

Exploration of South America

South America is a part of the New world discovered by the Europeans at the end of the 15th century. In 1498, Christopher

Columbus arrived at the mouth of the river Orinoco in Venezuela. A few years later the Spanish and Portuguese seamen sailed south along the eastern coast of South America. They discovered the La Plata Estuary and Rio de Janeiro Bay. In 1513, Balboa, another explorer crossed the Isthmus of Panama. He was the first whiteman to see the Pacific Ocean. Thereafter, the Spanish explorers began discovering western coast of South America.

All these Spanish adventurers were in search of gold and silver. The Spanish adventurers plundered gold and silver from the temples and palaces of the Incas. In their greed for gold they laid waste the wonderful land of the Incas and destroyed their noble civilization.

The Portuguese were more interested in finding a new westward sea route to India and the East. The first successful attempt was made by Magellan, the Portuguese navigator. He found the sea route to the Pacific Ocean through the strait which was later on named after him.

Spain and Portugal divided South America between them. The Portuguese slowly took possession of the vast area of Brazil and the Spanish claimed the rest of the continent.

Physical Features

Look at the map in Fig. 24. We can divide South America into four main physical divisions. They are the Western Coastal strip, the Western Mountains, the Central Plains and the Eastern Highland.

The Western Coastal Strip: From the map you will notice that there is a narrow coastal strip of lowlands lying between the western mountains and the Pacific Ocean. It stretches all along the western coast of South America from north to south. Note the Atacama

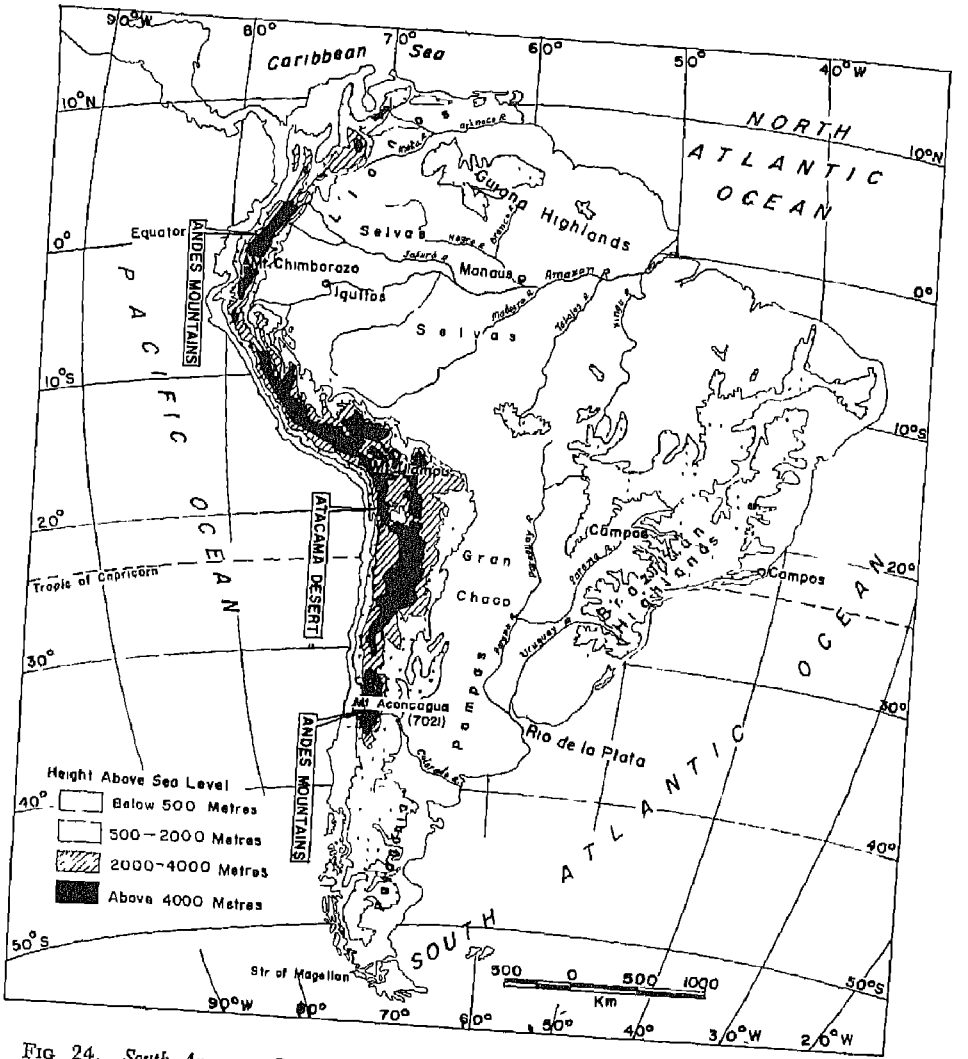


FIG. 24. *South America—Physical Features*

Note that South America is a continent of mountains, plateaus and river valleys. Find out important rivers from the map. Compare the physical features of South America with those of Australia.

Desert on the map. It lies on either side of the Tropic of Capricorn along the western coast of the continent.

The Western Mountains: The western mountains stretch for thousands of kilometres parallel to the western coast of South America. They are known as the Andes. They are also known as the Andes Cordillera. *Cordillera* is a Spanish word which means a mountain system. Next to the Himalayas, the Andes form the greatest mountain system in the world. They consist of lofty ranges, high plateaus and many volcanic peaks.

XV. *Snow-capped Mountains of South Argentina*
Look at the snow-clad still Andes Mountains in the southernmost part of Argentina in South America. Why is this part of the continent so cold?

The Andes consist of three main ranges. One of these runs along the coast and is rather low. It is followed by a high range forming the western wall of the mountain chain. The third range forming the eastern wall of the mountain chain is the highest. The last two main ranges come together at a few points only to separate again. Thus they enclose high plateaus. Such high plateaus are called *intermont plateaus* as they are enclosed between the mountains.

The Andes are the loftiest mountains in the world except the Himalayas. For half their length they are more than four kilometres high. They rise sharply from western coast and drop to the plains on the east. The highest peak of the Andes is Aconcagua, 7,021 metres high above sea level. Find out the other peaks from the map. Even near the equator many peaks are high enough to be covered with snow all the year round. Some of the high valleys are filled with *glaciers*, the rivers of moving snow and ice.

Several of the high peaks of the Andes are active valcanoes which from time to time throw out ash and lava, raising their conical summits higher and higher. Cotopaxi, in the Andes, is a very high active volcano. Many other volcanoes are either dormant or extinct. Earthquakes are very common in this region. They cause great damage to towns along the coast.

The Central Plains: They lie between the Andes and the Eastern Highlands. The central plains mainly consist of the basins of the Orinoco, the Amazon and the La Plata. La Plata is the name given to a river system consisting of the Parana, the Paraguay and the Uruguay rivers. The plains have been largely formed by these rivers and their tributaries.

These basins have different names. The *llanos* are the treeless warm grasslands occupying the basin of the Orinoco. The *selva*

are the equatorial forests occupying the Amazon valley. The word selva in Portuguese means a forest or woods. The *pampas* are the temperate grasslands occupying the basin of the La Plata or the River Plate. South of the pampas lie the bleak grasslands of Patagonia.

Of all the rivers in the world, the Amazon discharges the greatest volume of water and is 6,280 kilometres long. In length it is surpassed only by the Nile. The Amazon rises in the Andes and after flowing through the entire width of Brazil, falls into the Atlantic Ocean. It has several tributaries, some of which are as large as the Ganga. The muddy waters of the river can be seen more than 300 kilometres out at sea from the mouth. The mouth itself is more than 200 kilometres wide. It is navigable up to Manaus about 900 kilometres inland by large steamers and up to Iquitos by the smaller steamers.

The Eastern Highlands: The Eastern Highlands consist of the highlands of Guyana and those along the eastern coast of Brazil. Find from the map the river basin that separates them. Note the average height of these highlands. The Eastern Highlands are considerably older than the young fold mountains of the Andes. They are formed of very old igneous rocks like those of the Deccan Plateau in India or the Western Plateau of Australia.

The Brazilian Highlands slope gently towards the basin of the Amazon. In this part they are covered with savanna grasses and are known as *campos*. These highlands are very high near the eastern coast of Brazil, wherefrom they slope abruptly towards the coast. The Guyana Highlands are low and less extensive as compared to the Brazilian Highlands.

Climate and Vegetation

The greater part of South America lies within the tropics. Its climate is, therefore, hot. The Amazon basin which lies close to the equator has a typical equatorial type of climate. It means it is hot and wet all the year round. This region is covered with equatorial rain-forests, as are found in the Congo basin of Central Africa. The equatorial rain-forests in the Amazon basin are known as the *selvas*.

On either side of the Amazon basin lies the belt of the Sudan type of climate. In this climatic region there is a distinct dry

XVI *An Equatorial Rain-Forest Overlooking the Amazon*
Look at the equatorial rain-forest along the Amazon River. Do you see the thick undergrowth? Note the reflection of the trees in the still and clear waters of the river.

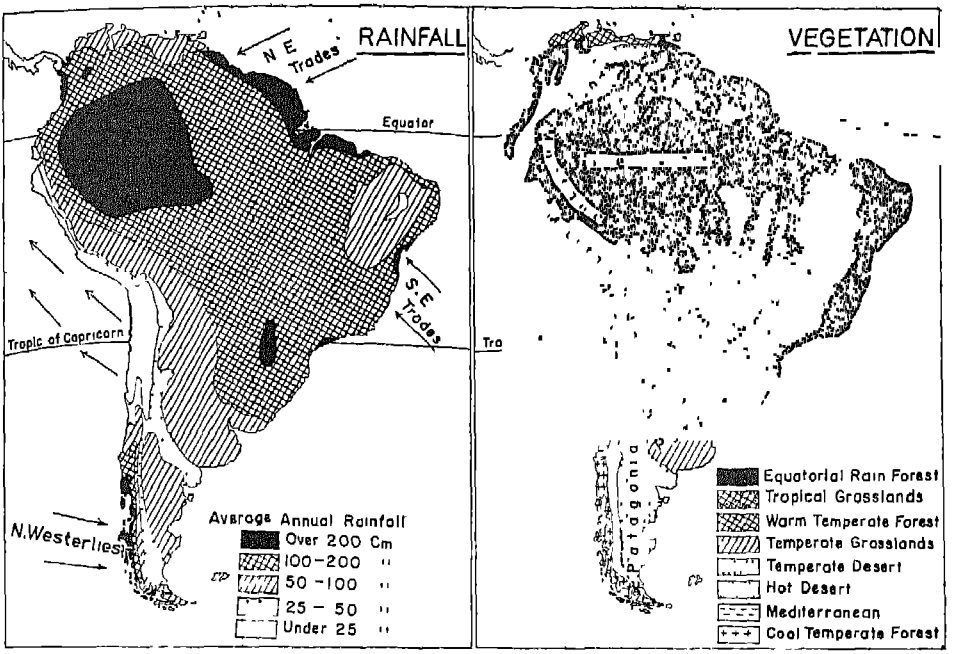


FIG 25 *South America—Annual Rainfall and Natural Vegetation*
Note the location of the Andes along the western coast of the continent. How does it influence the climate of Quito, Plateau of Bolivia, and the Deserts of Atacama and Patagonia?

season. Most of the rain occurs in summer, especially when the sun is directly overhead. Can you name the months when it rains heavily in Guyana Highlands in the north and in the Brazilian Highlands in the south? How will you explain the change in the timings of heavy rainfall in these two belts of the Sudan type of climate?

As we move away from the equatorial region, the evergreen equatorial forests give place to deciduous tropical forests. These in turn are replaced by the savanna grasslands. The tropical

grasslands of the Orinoco river basin in the north are locally known as *llanos* and in the south, that is the parts of central Brazil, these are known as the *campos*. Which winds are responsible for bringing rains to these tropical grasslands? Can you tell why do the eastern slopes of the Brazilian highlands receive fairly heavy rainfall?

Parts of southern Peru and northern Chile have a tropical desert type of climate. Note that the region lies on the western coast of the continent. The Tropic of Capricorn passes through this region. How is it that in spite of the proximity to the sea on the one hand and the high mountains on the other, this coastal belt does not receive any rain? You will notice that the region lies in the belt of the land-bearing trade winds. Moreover, it lies in the leeward side of the Andes Mountains. The Peru cold current hugs these coasts. This cold current further rules out any possibility of rains in this region, namely the Atacama Desert. The natural vegetation consists of scrubs, prickly pear and cactus.

Further south, that is in central Chile, there is the Mediterranean type of climate. This region receives rains in winter when the westerlies shift northwards. Why do the westerlies shift northwards in winter? Evergreen trees with thick bark, deep roots and thick and shining leaves are able to resist summer drought. Oaks, walnut, chestnut and figs are some of the common trees.

In the extreme south, that is in southern Chile, it rains all the year round. How is it so? Compare the climate of this region with that of Tasmania and the South Island of New Zealand. What similarity do you find between the climates of these places? This cool and rainy type of climate found along the western coasts of the continent in the temperate regions is known as *oceanic type of climate.*

It is a region of temperate mixed forests where beech and pine are the valuable trees.

South of the campos grasslands of southern Brazil, lies a region of temperate grasslands. This region has warm climate with rain all through the year, although it rains more in summer than in winter. These grasslands of central Argentina are known as the *pampas*. Note that the Brazil warm current flows along this coast. How does it affect the rainfall in this region?

Further south, on the eastern side of the Andes lies the Desert of Patagonia. It is a temperate desert land. Why does this region receive very poor rainfall? It lies in the rainshadow area of the westerlies which become dry by the time they cross the Andes from west to east. Also note that the Falkland cold current hugs the eastern coast of this desert region.

Political Map of South America

South America together with Central America and Mexico is called Latin America. This is because it was discovered and colonised by the Spanish and the Portuguese who speak languages derived from Latin, the language of ancient Rome.

South America today belongs neither to Spain nor to Portugal. It is made up of independent republics, each having its own government.

Which is the largest country in South America? Study carefully the map of South America and note that there are only two countries which do not have common borders with Brazil. Name these countries. The three small countries along the northern coast were the only colonies that were under non-Latin occupation. Guyana was under the British before it became free very recently.

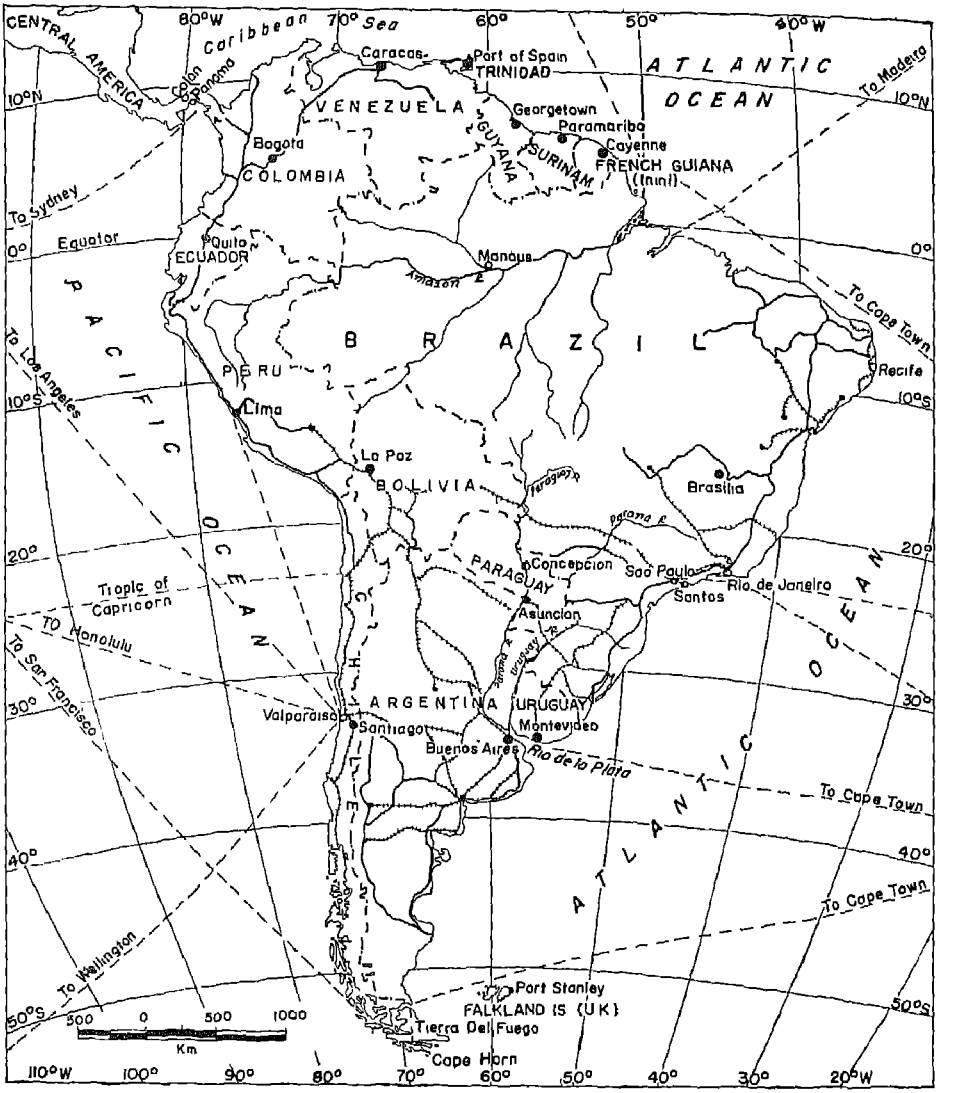


FIG. 26 *South America—Political Divisions and Transport*

Note that there are only two land-locked countries. Which are they? Which two countries have been named after rivers flowing through them?

A large number of Indians have settled in this country and the islands of Trinidad and Tobago. Surinam was the next to be free from the Dutch rule. French Guiana is the last remnant of the foreign rule in this continent.

THE NEW TERMS YOU HAVE LEARNT: *Cordilleras*—A series of parallel mountain ranges forming single mountain system along the western coast of the Americas. *Intermont Plateau*—A high plateau enclosed by the high mountain ranges *Deciduous Forest*—A forest consisting of trees which lose their leaves at some season of the year.

EXERCISES

Review Questions

1. Answer the following questions.
   (i) Which are the four physical divisions of South America?
   (ii) Which is the highest peak of the Andes?
   (iii) In what season are the rains plentiful in South America?
   (iv) Name the two ocean currents which affect the climate of South America.
   (v) Why are the deserts of Africa and Australia much larger than those of South America.

2. Distinguish between a tropical grassland and a temperate grassland.

3 Make out the correct pairs from the two columns·

(a) Tropical grasslands in the Orinoco basin	(i) Selvas
(b) Savanna grasslands in Brazil	(ii) Pampas
(c) Equatorial rain-forests in South America	(iii) Campos

(d) Temperate desert land in South America (iv) Llanos
(e) A hot desert land in South America (v) Patagonia
(vi) Atacama

4. Describe the physical features of South America, giving a brief account of its mountains, plateaus and major rivers.

5. Describe in brief the climate and natural vegetation of South America, pointing out the relationship between the two.

Picture Reading

6. Study the photographs XV and XVI. Compare and contrast the climates of the two places in respect of temperature, rainfall and the growing season.

Map Work

7. On an outline map of South America show the following and then answer the questions given below:

(a) *Currents*: Ocean currents flowing along the coasts of South America.
(b) *Winds*: Prevailing winds.
(c) *Mountains*. The Andes and the Eastern Highlands.
(d) *Cities:* Caracas, Manaus, Rio De Janeiro, Sao Paulo, Santiago.

(i) Which of these places will receive convectional rainfall?
(ii) Which place will receive rainfall from the north-east trades?
(iii) Which place will have relief rainfall?
(iv) Which place owes its rain to south-east trades?
(v) Which place will experience winter rains?
(vi) Name and locate yourself a place that will have little rainfall.

Topic for Class Discussion

8 '*The Inca Empire*'

Collect information on this topic. Tell the class about the life of the Incas.

11

Gifts of Nature and the People

THE TERMS YOU ALREADY KNOW: *Cash Crops*—Crops grown by the farmer not for his own consumption but mainly for the cash they bring him on sale. *Plantation Agriculture*—Scientific and commercial type of farming specializing in a single crop.

SOUTH America abounds in natural resources, that is, wealth provided by nature. It has extensive forests, rich in wild life. A variety of forest products are gathered, processed and used by its people. Next to its forests, are the grasslands mainly made up of fertile plains. Today, most of these have been brought under the plough to raise cereals and other crops quite a few of which have been introduced from the Old World. These grasslands have also become the home of domestic animals like cattle, sheep and pigs, all of which have been introduced by the European settlers. The continent is equally rich in its mineral wealth especially oil, iron, copper, bauxite and nitrates.

The prosperity of the South American people now depends upon its agricultural crops, animal products and mineral wealth. They provide ample raw materials for various industries which are bound to grow, bringing prosperity to these lands.

Forest Wealth

Very large tracts of the continent are covered with forests. The forests lying within the tropics are known as the *selvas*. The selvas, mainly confined to the Amazon basin are the largest store-house of hardwood in the world. In these forests, a large number of species of trees are found even in a very small area. This scattering and mixing up of a variety of trees make their exploitation difficult and uneconomic. Moreover, very large parts of these forests are inaccessible owing to lack of roads and other means of transport.

The Amazon basin is the homeland of the rubber tree. As these trees are widely scattered, it is difficult to collect latex from these trees. As a result, very little rubber is collected from these forests.

Carnauba palm trees yield wax which is found on their leaves. It is used in making shoe polish, candles, gramophone records and also lipsticks.

XVII. *Carnauba Trees in Brazil*
Carnauba tree yields wax which is found on its leaves Look at the broad and long leaves of this tree Do you see the asses loaded with wax collected from the leaves?

South of the Brazilian selvas are the parklands. *Parklands* are open forests as compared to the dense equatorial evergreen forests. Parana pine is the chief tree of these parklands. It is in great demand for timber and wood-pulp because of its softwood, easy to work with.

The yerba is an important tree of the Eastern Highlands. Like tea, its leaves are brewed. Yerba mate is a popular drink of the American Indians and is also known as "Paraguayan tea." Further south, quebracho is an important tree of the Gran Chaco Forests. It is a source of tannic acid used in tanning leather.

The forests along the eastern slopes of the high Andes are known as *montana*. They are the forests of the temperate climatic regions and yield softwood which is far more valuable than the hardwood of the selvas.

Wild Life

Like the Congo basin of Central Africa, the Amazon basin in South America is also a gigantic zoo. South America is said to be the 'bird continent' as it possesses no less than 1,500 species of very colourful birds. Most of them live on nuts, fruits, worms and insects which are so abundant. Candor is the largest bird of prey in the world. It is comparable to the vulture or the eagle. Rhea is a flightless bird. It reminds us of the ostrich of South Africa and the Emu of Australia.

Monkeys are yet another important tree dwellers in the thick evergreen forests of the Amazon basin. There are no apes but some of the monkeys are as intelligent as apes of the Congo basin and the Malaysian forests. The spider monkey is known for its acrobatic skills. The sad-looking woolly monkey can also hang by its tail. Squirrel monkeys are well known for their gentleness. Then there are night-loving owl-monkeys too! The monkeys thrive on nuts and fruits that are available here in an abundant measure.

There are many kinds of reptiles. *Reptiles* are scaly creeping animals. They have a strong skeleton of bones. Snakes and pythons

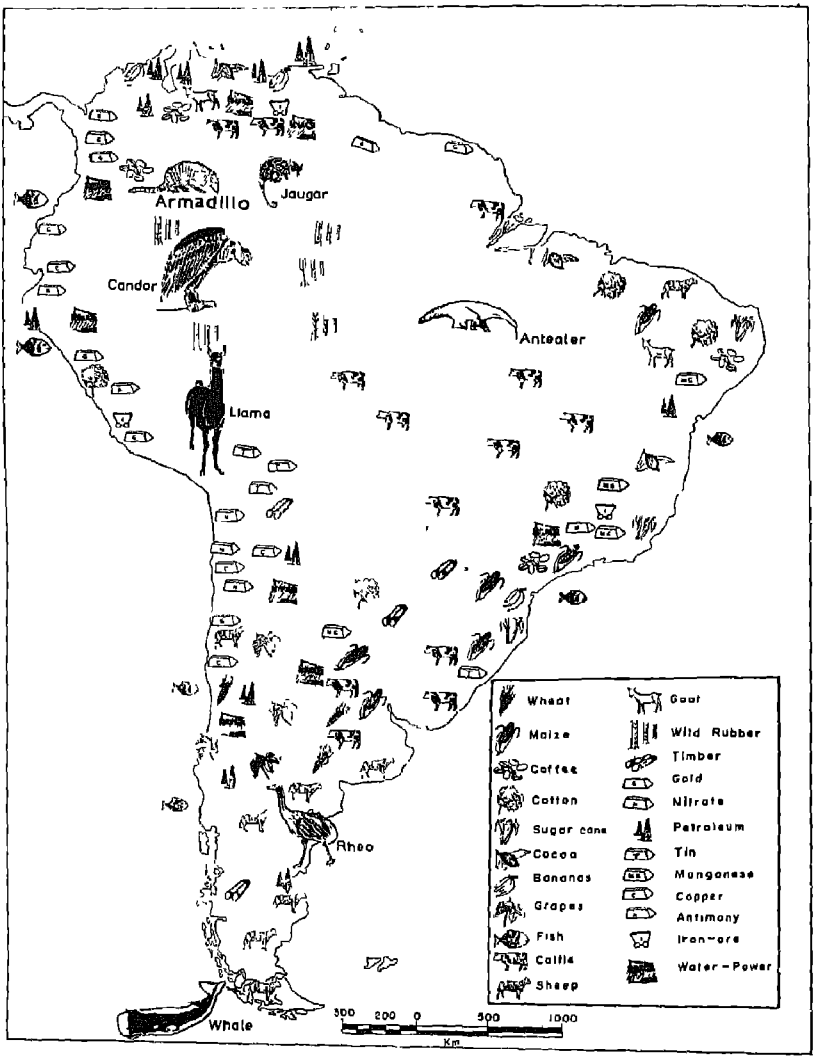


FIG. 27. *South America—Crops, Minerals and Wild Life*
Note the crops, minerals and wild life of South America. South America produces a little less than half the world's output of coffee, a fifth of its tin and copper and one-seventh of its oil.

are the most common reptiles in the equatorial forests. The anaconda is a large python, about ten metres long. It crushes its victims in its powerful coils. It can easily swallow animals as large as a pig or a monkey.

Crocodiles and turtles are yet another variety of reptiles. They live in muddy waters. They can swim in water and crawl on land. Their hides fetch good price, as several articles are made from them.

Blood-sucking leeches and flesh-eating dangerous ants are yet another inhabitants of these thick forests.

Anteaters and armadillos are the 'left overs' of the mammals that belonged to very, very old times. The anteater is a fairly big animal. It has four legs, a bushy tail and a long beaklike nose. It uses its long sticky tongue for catching ants. This shy animal moves only at night. The armadillo is a timid animal in spite of its strong armour, or a protective shield. South American natives eat its flesh and make baskets of its strong shield.

The Puma is a dangerous animal of the cat family. It is stronger than the leopard. It is an agile jumper and climber. It does not attack man unless it is provoked. Jaugar is yet another tiger-like animal of prey. It lives mostly on trees, hunting monkeys and other tree-dwellers.

Llamas are the strange animals of South America. They belong to the highlands of the Andes. Being sure-footed animals they are used as pack animals that is, as the beasts of burden in this mountainous region. These long necked animals belong to the family of camel and can go without water for many days. They get moisture from green plants, scrubs, low shrubs, lichens and mountain plants. Before the advent of the white people, llamas were the only

domesticated animals of South America. Like camels, they are also known for their bad tempers. When angered, they spit half-digested food at their enemy's face!

Alpaca is a smaller variety of Llama, found in high tablelands. Guanaco, a wild variety of llama, is found in the desert of Patagonia.

Harvest of the Sea

Sea-waters around South America especially along its western coasts, abound in fish. The cold currents bring with them ample food for fish from the Antarctic Ocean. Fishing is an important industry of Peru, a country that now leads the world in its annual fish catch. South America accounts for about one-fifths of the world's total catch of fish. Do you think that catching sea fish on a large scale is rightly described as harvesting of the sea?

Pastures and Domestic Animals

South America has extensive pasture lands. These, however, remained almost unused till the European settlers introduced cattle and sheep from the old world. The original grasses were not very nutritious. Hence these were gradually replaced by a more valuable variety of grass—alfalfa. The *alfalfa* is a leguminous plant, which, besides being nutritious, helps in maintaining the fertility of soil. Cattle fatten very quickly on these grasses. In South America, cattle and sheep are reared mainly for their meat and mutton. Cattle are reared in semi-humid parts of Argentina, Uruguay and parts of Brazil. Argentina has now become the largest exporter of meat. Sheep are confined mainly to the semi-arid lands of Chile and to the parts of the Patagonian desert of Argentina.

Cereals and Other Crops

The American Indians had brought much of the grasslands

under the plough. They raised maize which was their staple food crop. In some parts of the Amazon basin cassava was grown. Potatoes, groundnuts, tomatoes and beans are yet other crops that originally belonged to this region.

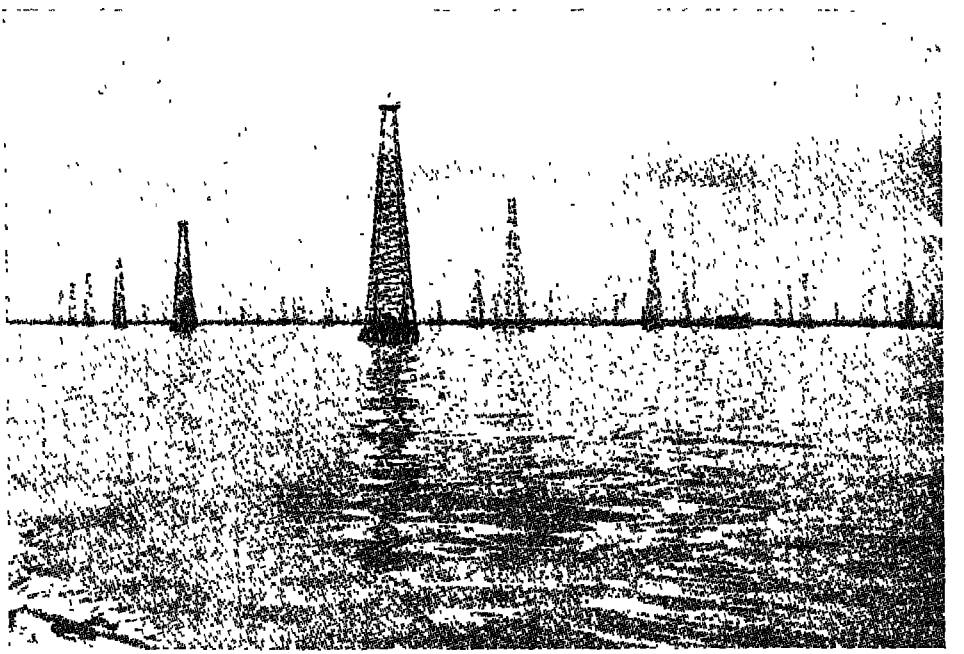
Today, maize and wheat are the two staple cereal crops of South America. Maize belongs to the warm lands with a fair amount of rainfall. Its main producers are Brazil and Argentina. Wheat, on the other hand, is a crop that belongs to the cool temperate regions. Argentina is the leading producer of wheat in South America. Wheat lands in Argentina are not far from its coasts. This is a distinct advantage which Argentina as the important exporter of wheat enjoys over the countries such as Australia, Canada and the United States. Unlike Argentina, these countries have to haul wheat over long distances before they can export it to other countries.

European settlers have introduced some other important cash crops. They are coffee and sugar-cane. There are now large plantations of coffee and sugar-cane. Both these crops occupy an important position in the economy of Brazil. Today Brazil is a leading producer of coffee—a crop whose homeland is believed to be Ethiopia in East Africa. Colombia is the second important producer of coffee. Together they account for over half the total output of coffee in the world. Cotton is yet another important cash crop of Brazil.

Mineral Wealth

South America is very rich in minerals. The Spanish came to this continent because of the tales of wonderful treasures of gold and silver. These precious metals were carried away by the Spanish people in large quantities. Today the continent is, however, known for some other important minerals.

There are huge deposits of mineral oil in South America. Venezuela and the islands of Trinidad and Tobago claim most of these huge reserves. Much of the oil is being drilled from below the lake waters. Asphalt or coal-tar is also found in Trinidad. Very huge quantities of mineral oil are exported to the United States of America and Western Europe. About one-seventh of the world's mineral oil comes from this area.



XVIII. *Oil Derricks in Lake Maracaibo*
Look at the oil derricks in the Lake Maracaibo in Venezuela. They tell us that the oil wells have been sunk deep beneath the lake bottoms. Venezuela is the largest producer of petroleum in South America.

Equally important are its valuable reserves of iron-ore, yet

another indispensable mineral resource in our present day life. Brazil has world's one of the largest iron-ore deposits.

Copper which is very widely used in making electric wires is yet another important mineral resource of South America. It accounts for nearly one-fifth of the world's total output. Chile is the major producer of copper in this continent.

Tin comes next; and again, South America is responsible for the one-fifth of the world's output of this metal. Bolivia is the world's second largest producer of tin, standing next only to Malaysia.

South America is very fortunate to possess rich sources of manures and fertilizers. Chile is the largest producer of nitrates. It is lucky enough to have these resources located in the desert of Atacama, where absence of rains is a boon in disguise. Any rainfall in this region would have dissolved this valuable fertilizer and washed it away to the sea.

Similarly, Guano Islands, off the coast of Peru, are extremely fortunate in having the world's most concentrated single source of natural manure. These rainless and deserted islands are a home of millions and millions of Guano birds. These birds live entirely on sea fish It is believed that they consume nearly five million tons of fish in these waters every year! The droppings of the birds have been in use, for several hundred years, as valuable manure for a variety of crops. Today, they are in great demand for sugar-cane and cotton crops. This natural manure contains all the ingredients of plantfood that can be readily assimilated by the plant.

Apart from these, South America possesses the reserves of bauxite, manganese, silver, and antimony. Surinam and Guyana are the major suppliers of bauxite to the United States and Canada,

respectively. Bauxite is an ore from which aluminium is extracted.

South America has huge water-power resources which are yet to be developed. Brazil has nearly a third of the total water-power resources of South America. The country accounts for nearly three-fifths of the water-power that has been developed so far in South America.

With these rich natural resources South America has started developing new manufacturing industries. These include iron and steel, sugar and cotton textiles in Brazil; meat processing in Argentina; oil-refining in Venezuela; and smelting copper in Chile.

People and Transport

The total population of South America is about 165 million. The average density of its population is nine persons per square kilometre. But the actual distribution of population is very uneven. Nearly one-half of the continent has a population density of less than two persons per square kilometre. Large areas of the Amazon Lowlands, the Llanos, the Gran Chaco, the Guyana

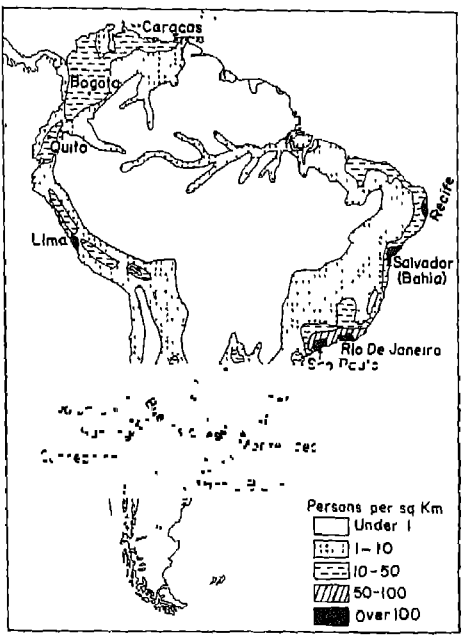


FIG. 28 *South America—Distribution of Population* Note the empty areas and densely peopled parts of the continent How will you account for the low density of population in the Amazon Lowlands, the Gran Chaco and Patagonia?

Highlands, Atacama and Patagonia deserts are uninhabited. These lands fail to attract people because their climates are rather unfavourable for human settlements.

The most densely populated areas in South America are near the coast. A large proportion of population lives in port towns and capital cities. Thick forests, high mountains and the lack of means of transport are all responsible for very low population in the interior of the continent.

The people of South America consist of three main racial groups. They are the native Indians or American Indians, the Negroes and the Europeans. Then there are now a large number of people of mixed races. They are *mestizos*, a new race of people of mixed Indian and European blood; *mulatto*, another race of people of mixed European and Negro blood; *zambo* is yet another race of people of mixed Negro and Indian blood. Among them the largest number is of mestizos. There is no racial discrimination in South America, very much unlike South Africa. The colour of man's skin is of no importance provided he can work and earn money. Those who are unsuccessful lead a life with a very low standard whether they are black, brown or white.

South America has been colonised by the Europeans—mainly by the Spanish and the Portuguese during the last four hundred years. When the first Europeans came to South America the land was inhabited by many tribes of Indian Americans. Some of these Indian tribes like the Incas of the west were highly civilized while some tribes in the eastern part of the continent were primitive. The Inca Empire covered greater part of Equador, Peru and Chile. Agriculture was an important occupation of these people, with maize and potatoes as the main crops. Their houses were built of stone

and large bricks. They knew the art of bringing water to their fields. They domesticated the llama and the alpaca. They mined gold, silver and emeralds and used them for decorating temples and palaces.

The east coast of South America was discovered by the Portuguese. The Portuguese found no gold or silver to attract them. They, however, realized that there was a great possibility of growing sugar-cane in the hot wet coastal plains of Brazil. Sugar was then in great demand in Portugal. The Portuguese brought Negroes in large numbers from Africa to work on the sugar plantations. Negroes, therefore, form a large part of population in the northern coastal plains of the continent.

During the early part of the present century many settlers came from Italy and Germany to work in the farming regions of Argentina, Uruguay and southern Brazil. A large number of Japanese have now settled in the coffee districts of Brazil.

The means of transport in South America are yet to be developed. The extensive equatorial forests, the high and unbroken mountain ranges of the Andes and the rocky Eastern Highlands have stood in the way of a good network of land transport. Rivers are the only means of transport in the forests of the Amazon basin. Cheap river transport is provided by the Amazon and the La Plata rivers. These rivers are navigable for long distances.

Look at the map of South America in your atlas. You will find that the chief railways and roads are on the plains of Argentina and Brazil. They are mostly in east-west direction. Some of the highest railways of the world are across the Andes in South America. Along the western coast of the continent there is a very long road in the north-south direction. Through what countries does it pass?

THE NEW TERMS YOU HAVE LEARNT: *Alfalfa*—A deep-rooted leguminous plant largely used as a fodder crop. *Mestizo*—A race of people in South America of mixed Indian and European blood.

EXERCISES

Review Questions

1. Answer the following questions:
   (i) Name the three important races of people in South America
   (ii) What are the four leading minerals of South America?
   (iii) Name the three main cash crops of South America.

2. Complete the following statement with the most appropriate ending:
   Brazil could become the largest producer of coffee in the world because
   (i) it is the national drink of Brazilians.
   (ii) coffee is the native plant of Brazil.
   (iii) there are high plateaus in the hot and humid tropics.
   (iv) coffee brings an assured and steady income to the farmer.

3. Give a single term for each of the following:
   (i) Crops grown by the farmer not for his own consumption but mainly for the cash they bring him on sale
   (ii) A deep rooted leguminous plant largely grown as a fodder crop.
   (iii) Scientific and commercial type of farming specializing in a single crop.

4. Which parts of South America are densely populated? Why are they so?

Picture Reading

5. Study the photographs XVII and XVIII. Which one of the two natural gifts is replenishable?

Map Work

6. In an outline map of South America show important crops, minerals, railways and roads.

Topic for Class Discussion

7. '*Effects of Explorations and Discoveries on Our Lives*'

   Collect information on the following points and narrate it to the class.

   (a) exchange of cereals, vegetables, fruits and other crops.
   (b) change in items of food and clothing
   (c) domestication of animals.
   (d) growth of trade and industry
   (e) redistribution of population.

12

The Coffee Pot of the World

THE TERMS YOU ALREADY KNOW: *Plateau*—A broad and rather level stretch of land rising sharply above some nearby lowland or water surface. *Shifting Agriculture*—Practice of bringing new land under cultivation by giving up the old farms when they lose fertility and are overrun by weeds.

BRAZIL lies in the north-eastern part of South America and occupies a little less than one-half the total area of the continent. This Portuguese-speaking country is the fifth largest in the world. It is more than two and a half times the size of India. But its population is less than one-sixth of our country. Brazil is the greatest country of the Southern Hemisphere both in extent and in population. The country is a high plateau of very old rocks. Brazil is famous for its plantation agriculture, especially coffee. It is also known for its large reserves of high grade iron-ore.

Look at the map of Brazil. It is surrounded by Atlantic Ocean from two sides. Name the countries which have common border with Brazil. Which two countries of South America do not have common border with Brazil? Note the position of the equator on the map of Brazil. You will find that the greater part of the country lies to the south of the equator.

Brazil was discovered more than 450 years ago by the Portuguese. They claimed the land for the king of Portugal and called it "Vera Cruz" meaning the "True Cross". However, this name did not last long. It actually got its present name from the redwood tree, brasil, which was then the most important product of the country.

Land and Climate

Brazil has no high mountains. But the greater part of the country is a vast plateau, known as Brazilian Highlands. The eastern and south-eastern parts of the plateau are comparatively high. In this part at several places the highlands drop abruptly towards the narrow coastal plains. This wall-like high and steep slope running more or less in a straight line is known as *escarpment.*

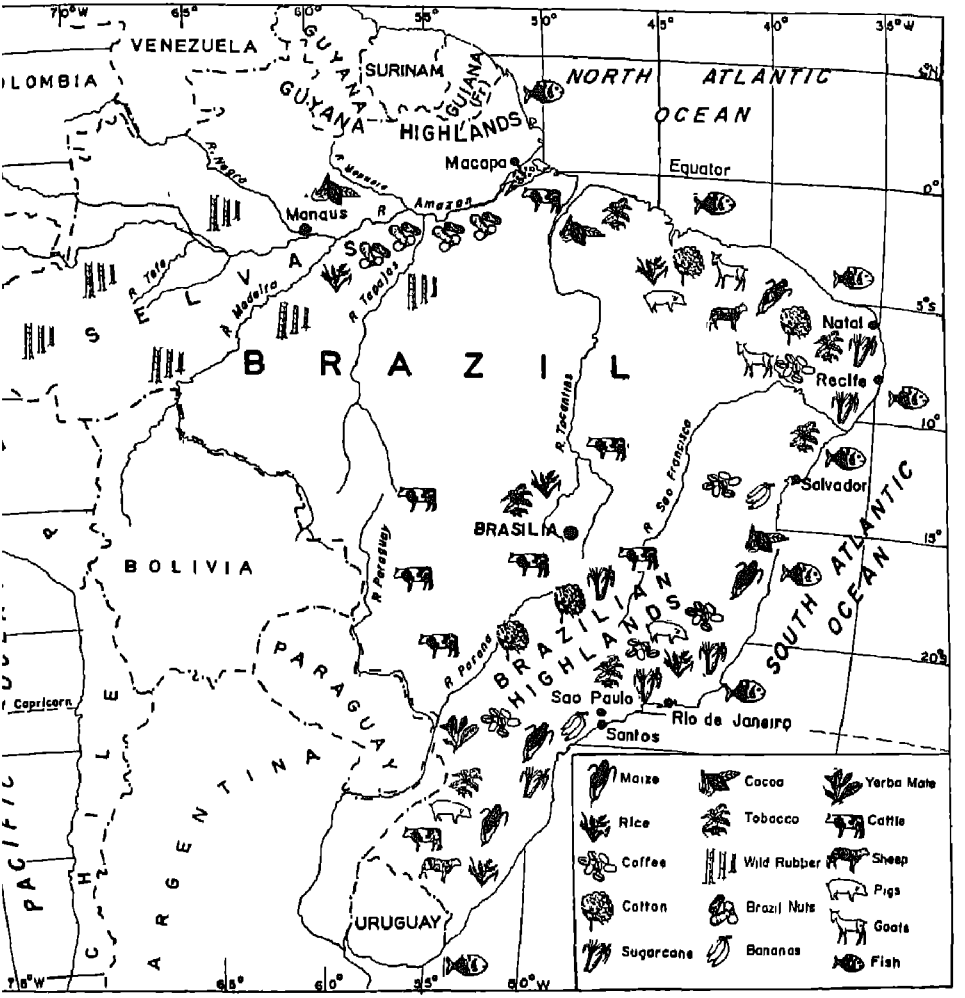
The northern part of the country is an extensive alluvial plain. It has been built up by the mighty Amazon and its large tributaries. For centuries, they have brought down great quantities of alluvium from the surrounding highlands, forming this great flat lowland. In the extreme north lies some portions of Guyana Highlands.

Brazil is mainly a tropical country with a small part in the south extending into the warm temperate zone. The Amazon basin and northern coastlands have equatorial type of climate. Here the season is hot and wet throughout the year. This region is covered with dense equatorial rain-forests.

Major portion of the Brazilian plateau has the sudan type of climate of summer rain. The natural vegetation of the region is the savanna grass. On the southern parts of the plateau the climate is mild and cool. The region is covered with temperate forests. Further south along the borders of Uruguay is the zone of temperate grasslands.

nomic Development

Brazil is mainly an agricultural country. About one-half of



29. *Brazil—Crops and Animals*
Note the crops and the areas of animal rearing in Brazil. What makes Santos the world's

its population is engaged in agriculture. Its fertile soils and warm climate favour growth of different kinds of crops. Maize, rice, beans, cassava and potatoes are the food crops grown mainly for local consumption. Coffee, cotton, sugar-cane, cocoa and tobacco are grown mainly for cash they bring to the farmer. Coffee is by far the most important crop of Brazil. This crop was introduced in Brazil by the Portuguese more than a 100 years ago. Today, Brazil is the largest producer and exporter of coffee in the world.

Coffee is grown mostly on the slopes of the high plateaus in the tropical region. The soil here is derived from igneous rocks such as basalt. This very deep and fertile soil is easily drained. Because of its red colour it is known as *tera-roxa*. The coffee tree requires much rainfall and high temperature especially when it produces berries. At the time of harvest, it needs less of rainfall and more of sunshine.

In Brazil, coffee is generally grown on very large plantations which are called *fazendas*. A large coffee fazenda usually covers an area of several square kilometres and may contain as many as million coffee trees. On such a big fazenda, nearly 3,000 to 4,000 workers are required to look after the trees. They are required to live on the fazendas. Each family looks after a certain number of trees. It has a small plot of land on which it grows maize, sugar-cane and vegetable for its own use.

The coffee trees may grow to a height of about 9 metres. But they are pruned to a size of a low bush about 3 metres tall. This height is suitable for picking the berries. The coffee trees begin to yield berries from five to six years after planting. The berries resemble cherries. The full-grown berries are picked, sorted and washed. The picking season lasts from June to November. The

XIX *Coffee Picking in a Brazilian Fazenda*
A Brazilian woman is busy in picking coffee pods Look at the big feltcap worn by her What kind of a climate do you expect in this region?

berries are cured and dried. The outer cover or the hulls are removed usually with a hulling machine. The beans thus left are polished, cleaned and sorted. The beans are green when they are put into the sacks for export. Santos is the world's largest coffee port.

On reaching the countries where the beans are consumed they are roasted and ground into coffee powder. Since coffee quickly loses its flavour after roasting, this process is conveniently done in the countries where the coffee beans are consumed.

Cotton is the next important crop. Brazil is one of the leading cotton producing countries of the world. Its total production of cotton is a little less than that of India. The north-eastern part of Brazil is known for sugar-cane plantations. Brazil is now an important producer of sugar as well It is also one of the largest producers and exporters of cocoa in the world, standing next only to Ghana and Nigeria in Africa

XX. *Harvesting Sugar-cane*
Look at the cart loaded with sugar-cane and drawn by five pairs of bullocks. Why are so many bullocks necessary to draw the cart? Note that the bulls are just similar to those in India.

Many kinds of tropical fruits are grown in Brazil. Oranges, bananas, pineapples and grapes are the chief fruits of the country.

After the United States, Brazil is the largest producer of oranges in the world.

Grasslands and permanent pastures occupy about one-eighth of the total area of Brazil. Therefore, animal rearing is a very important activity. Cattle, pigs, sheep, goats and horses are the common domestic animals. Of these, the cattle are the most numerous and important They are reared mainly for their meat, hides and skins.

Brazilian forests are among the richest in the world. They provide many useful products, such as timber, oil-bearing fruits, gums, resins, waxes, essential oils, cellulose, fibres and nuts.

Many kinds of timber are obtained from these forests. 'Balsa', is a very light wood. It is used for making lifeboats and as a substitute for cork. Brazilian pepper tree wood is very heavy. Its density is one and a half times that of water. Parana pine is in greatest demand for building purposes.

The bark of the cinchona tree is used in making quinine which is a valuable medicine in treating malaria. Carnauba palm trees yield wax which is found on their leaves. How is this wax used?

Brazil is the homeland of rubber. The rubber tree was first found growing wild in the Amazon forest. It was from here that it was taken to the countries of the east like Malaysia for commercial growing. Once, the Amazon basin was the only rubber-producing area in the world. Today, its production is almost negligible.

Brazilian Highlands like the plateau of South Africa are rich in minerals. The richest mining areas are in the state of Minas Gerais, which in Portuguese means 'general mines'. Iron-ore is the most important mineral of the country. It is believed that Brazil contains about one-fourth of the world's total iron-ore reserves.

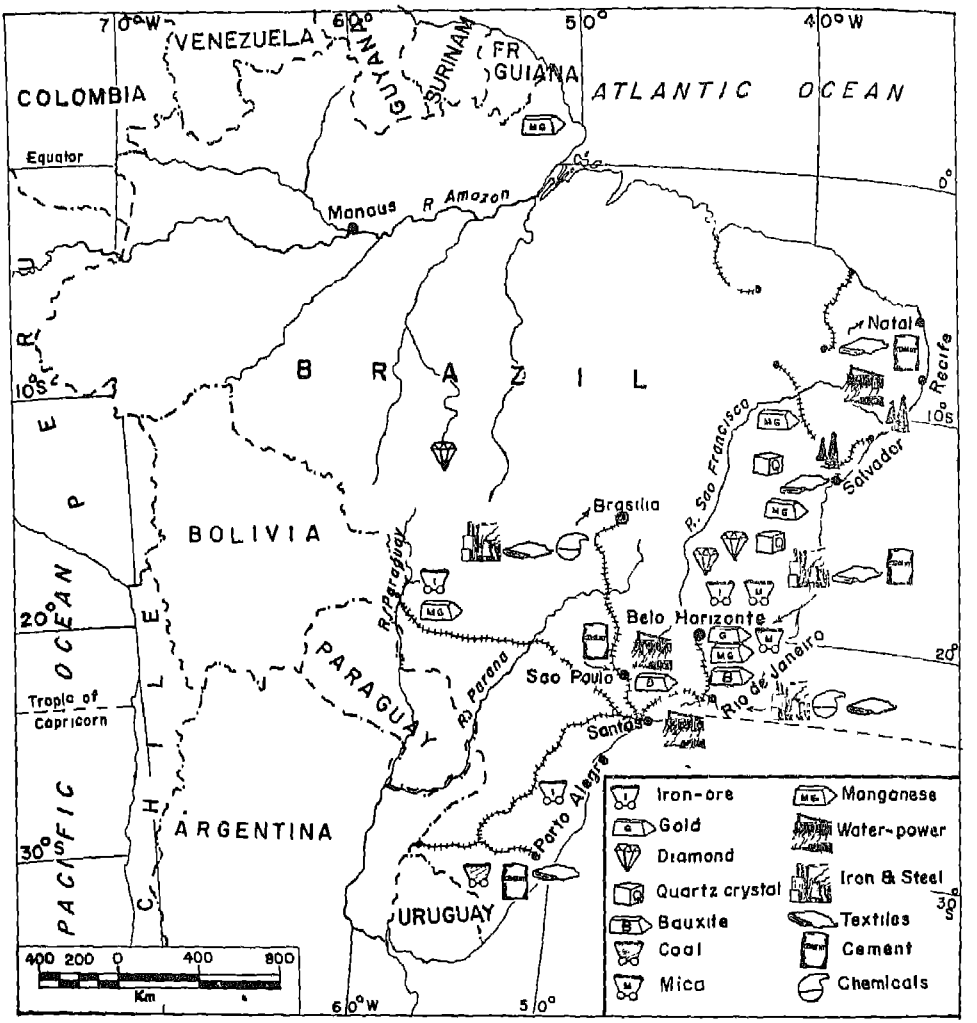


FIG. 30 *Brazil—Minerals and Industries*

Note the different minerals found in Brazil. Why is the railway network relatively good in the southeastern parts of the country?

The ore is of high grade and contains few impurities. It now exports iron-ore in large quantities. Manganese is also an important mineral which is exported.

Gold and diamonds are also mined. Their discovery attracted many people to the Brazilian Highlands. Now their production is very low. Brazil leads the world in the production of quartz crystals. They are of high quality and are used in making radio receiving sets. Large deposits of good quality mica are also found in the country. Mica is used in electrical goods.

Brazil lacks good quality of coal which hampers the development of its iron and steel industry. The country has some low grade coal in the South. But on the other hand, Brazil is very rich in water-power resources. Its torrential rivers flowing towards east and south form a series of falls on their way as they drop from the Brazilian Plateau. This helps to develop electricity on a large scale.

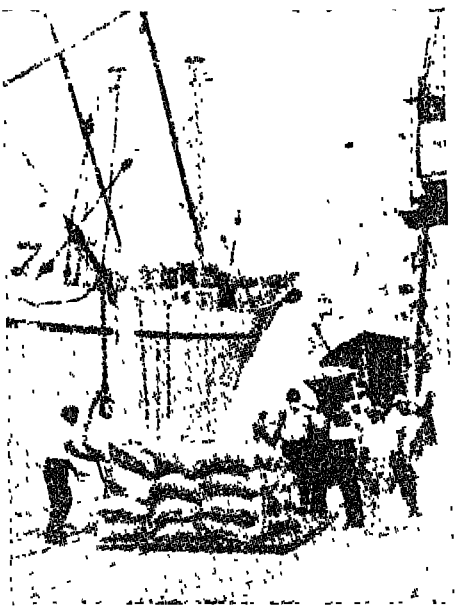
Most of the industries of Brazil are based on local raw materials and abundant supplies of hydro-electricity. The most important is the textile industry, which includes the spinning and weaving of cotton and wool. Cotton téxtile alone engages about one-fourth of the total industrial workers. Its iron and steel industry is growing very rapidly. Brazil now produces motor vehicles and tractors. Its other industrial products are electrical equipments, chemicals, paper, rubber goods, cement and processed foods. Sao Paulo, Rio de Janeiro, Belo Horizonte and Santos are the main industrial centres. The total value of industrial production in Brazil is now much more than the value of its agricultural produce.

People

Brazil has a population of about 80 million people. But its huge size gives it a very low average density of only nine persons per square kilometre. Majority of the people live in the Atlantic coastal region. The Amazon lowlands are very sparsely populated.

People of Brazil mainly consist of Europeans, local people called Indians, Negros and the mixed races. Besides these there are large number of Japanese and other Asians.

In the very remote parts of the Amazon forests live primitive Indian tribes who have no contact with the outside world. They use spears and blow-pipes for hunting animals and birds. They build their huts near a river, but conceal them so cleverly that they are not visible to any one passing by them in a boat. They live by hunting and gathering forest products. Indians who are a little more advanced live along the main rivers. They build their huts on tall piles so that they are not swept away when the rivers are in flood. They make out living by shifting agriculture and by collecting forest



XXI *Exporting Coffee from a Brazilian Port*
Look at the sacks of coffee beans being loaded on a ship for export. Why are coffee beans, and not coffee powder, exported from Brazil?

products such as nuts, wild rubber, snake skins, expensive woods, gums and medicinal plants and selling them at small trading centres along the rivers.

Sao Paulo and Rio de Janeiro are the most important cities of Brazil. Before 1960, Rio de Janeiro was the capital of the country. Now it is Brasilia. Recife, Belo Horizonte and Salvador are the other important cities.

Trade

Brazil depends a great deal on international trade. For many years coffee has been its leading export. The fluctuations in the international prices of coffee still affect its national economy. Cotton takes a second place. A great variety of other products such as cocoa, iron-ore, wood, sisal and sugar are also exported. Brazil imports mainly manufactured goods, especially machines, machine tools, rolling stock, motor engines and radio equipments. It also imports coal, petroleum, chemicals, wheat and flour.

THE NEW TERMS YOU HAVE LEARNT: *Escarpment*—A wall-like high and steep slope running more or less in a straight line *Fazenda*—A very large coffee estate or plantation in Brazil. *Terra-roxa*—A deep, red soil found on the Brazilian Plateau highly suitable for coffee growing

EXERCISES

Review Questions

1. Answer the following questions:
   (i) Name the two main plateaus of Brazil.
   (ii) What type of climate is found in the Amazon basin?
   (iii) Name the two leading exports of Brazil.
   (iv) How did Brazil receive its name?

2. Brazil is a land of green and thick forests. Some of its more useful trees are described in the first column. Match them correctly with their names given in the other column.

(a)	One of the most important redwood trees	(i)	Brasil
(b)	A very, very light wood used for making lifeboats	(ii)	Cinchona
(c)	A heavy wood that always sinks in water	(iii)	Carnauba
(d)	A tree from which wax is derived	(iv)	Pepper tree
(e)	A tree whose bark is used in combating malaria	(v)	Balsa
		(vi)	Parana Pine.

3 Give one word for each of the following:
   (i) A fertile red soil, suitable for coffee growing found on the slopes of plateaus in Sao Paulo State.
   (ii) A wall-like high and steep slope running more or less in a straight line.
   (iii) A very large coffee plantation in Brazil.
   (iv) Practice of bringing new land under cultivation by giving up the old farms when they lose fertility, and are over-run by weeds.

4. Describe the favourable conditions required for a good coffee crop.

5. Write the story of coffee from beginning to end. Describe all the stages it has to pass through.

6. Give an account of major agricultural and mineral products of Brazil. What are its exports?

Picture Reading

7. Study all the photographs related to Brazil and Australia. What difference do you notice between the two countries in respect of (a) use of manual labour, (b) use of animal energy and (c) the modes of transport?

Map Work

8. Show in the outline map of Brazil the distribution of crops, forest products and minerals

Topic for Class Discussion

9. '*Will Brazil be one of the Highly Industrialized Countries of Tomorrow*?'

Collect information on this topic and draw your own conclusions after listing the points that are in favour and against this proposition.

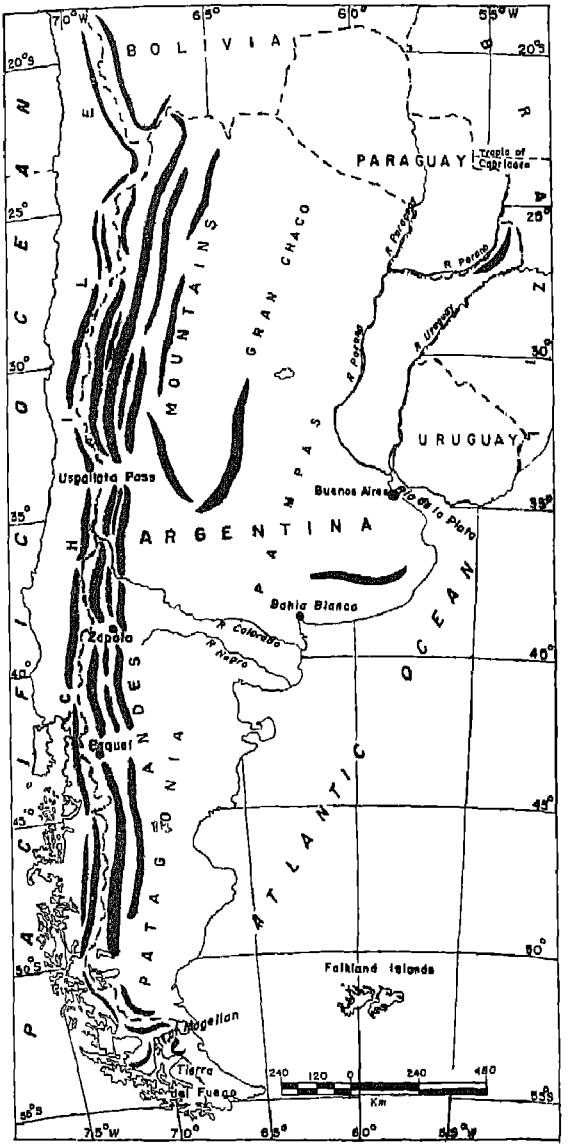
13

The Land of Wheat and Cattle

THE TERMS YOU ALREADY KNOW: *Rift Valley*—Steep-sided elongated valley between the two parallel long cracks or rifts developed in the land. *Loess*—Very fine dust brought by the winds and deposited in layers one over the other. *Rotation of Crops*—Different crops that are grown one after the other on the same piece of land, mainly with a view to restore fertility of soil

OCCUPYING the southern part of the continent, Argentina is the second largest country of South America. Name the countries having common frontiers with Argentina. Study the map carefully and name a lofty mountain, a high plateau, three rivers flowing through a level lowland, an ocean and a cape that together form the natural boundaries of this country. Argentina owes its wealth to its rich grasslands, the pampas. No wonder if it is one of the great beef and wheat producing countries of the world.

Look at the map in Fig. 31 and find out the latitudes and longitudes between which Argentina is situated. Which island forms its southernmost portion? Note the islands that lie south-east of the country. Argentina is nearly four-fifths the size of India. But its population is even less than that of the Mysore State.



Land and Climate

Argentina is mainly a country of lowlands. These lowlands lie to the east of the mountainous areas of the Andes. They run all through its length from north to south. In the north, they are occupied by marshy lowlands of the Gran Chaco. In the South beyond the Colorado river, they merge into an extensive low plateau of Patagonia. With almost a flat surface, the plateau of Patagonia slopes gradually towards the east.

FIG 31 *Argentina—Physical Features*
Note the important rivers of Argentina. Which rivers make the La Plata river system? Why do most of the railways focus on Buenos Aires?

The most important part of the lowlands is the pampas. *Pampas* is a Spanish word meaning 'extensive plains'. The pampas are the main source of Argentina's wealth. More than three-fourths of the population of the country lives in the pampas.

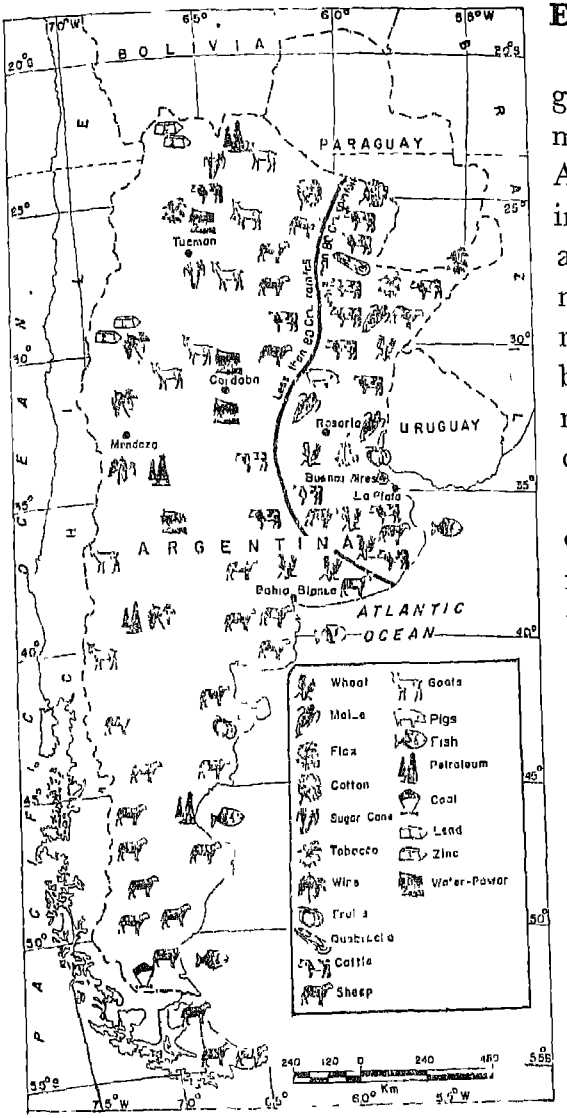
The pampas are made up of a deep fine soil free from any stone. It is similar to loess in north-west China. For thousands of years stormy winds have carried fine rock particles from the dry west and deposited them in layers one over the other. In some places, these layers of fine soil are more than 300 metres deep. The pampas are, therefore, one of the most fertile grasslands of the world.

The western Argentina is a land of hills, mountain ranges, high plateaus and rift valleys. The lofty mountains of the Andes form a boundary between Argentina and Chile. The Andes have several high peaks. Mt. Aconcagua is the highest of them all. Find its location and altitude from a map. In the southern part of the Andes, there are several lakes which add to the scenic beauty of the country.

The climate of Argentina is generally temperate. Temperature decreases from north to south and rainfall from east to west. Most of the rainfall comes in the summer months. Which are they?

The climate of the Gran Chaco is hot and rainy. The pampas, on the other hand, have warm summers and mild winters. They receive good rainfall, well distributed throughout the year. The climate of Patagonia and the western part is mainly cold and dry.

Grass is the chief vegetation of Argentina. European grasses and alfalfa have now replaced original grasses that were less nutritious. The Gran Chaco is a land of warm temperate forest interspersed with patches of savannas. Quebracho is the most important tree of these forests. Its wood is very hard.



Economic Development

Animal rearing and grain farming are the two most important activities of Argentina. Many of its new industries are based on its agricultural produce. Its main animal products are meat, hides, wool, milk, butter and cheese. Wheat, maize, and linseed are its chief crops.

Wheat is the leading crop. Argentina accounts for more than three-fourths of the total wheat produced in South America. It is the third leading wheat exporter of the world. Pampas are the main wheat lands of Argentina. Wheat is grown during mild winters and is harvested in early summer.

FIG. 32 *Argentina—Crops and Animal-Rearing* Note the crops and areas of cattle-rearing and those of sheep-rearing in Argentina. What is the most important mineral of Argentina?

In South America Argentina is the second largest producer of maize, standing next only to Brazil. But it has been the leading exporter of maize in the world. Why should it be so? The maize growing area in Argentina is also confined to the pampas. Barley and oats are cultivated largely as rotation crops. Rice is also grown in some areas.

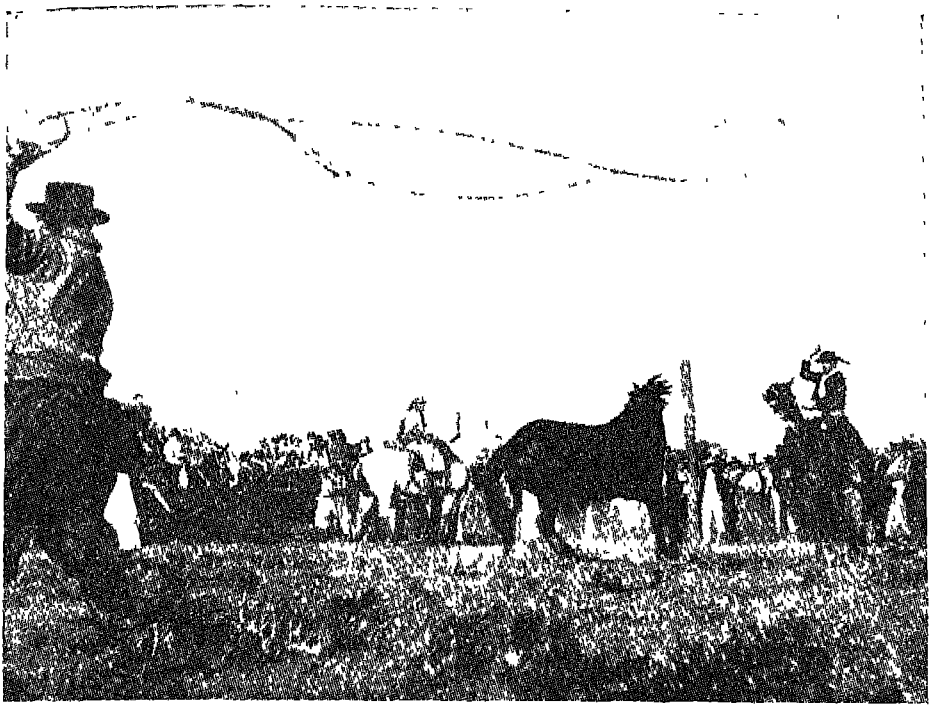
Flax, sugar-cane and cotton are the main cash crops of Argentina. Flax is largely grown for its seeds (linseed). Linseed oil is extracted from flax-seeds and the residue is made into cattle cake. Linseed oil is used in paints making. Argentina is the leading producer of linseed in the world. Most of the crop is exported in the form of linseed oil. Alfalfa is the main fodder crop. Vegetables and fruits are also grown commercially.

Animal-rearing, also known as pastoral forming, dominates in almost all the regions of Argentina It consists of both cattle-rearing and sheep-rearing. Cattle-rearing is confined mainly to wet areas of the east and sheep-rearing to the dry west.

In Argentina cattle are reared on large pastoral farms which often cover several square kilometres of land. They are fenced with wire and are known as *estancia*. They are subdivided into paddocks. The smaller yards where animals are sorted and branded are known as *corrals*.

The modern estancia is run on the lines of a big factory. There is a general manager and under him work the several departmental managers. Their job is to look after one of the departments such as cattle, fodder crops, machinery, water-supply, shelter-belts, and transport.

The managers live in spacious houses. There are smaller houses of the labourers and gauchos. Besides these, there are a few



XXII. *Gauchos Catching a Horse*

Gauchos of Argentina are giving a demonstration of how to catch horses with the help of a long rope. Do you think it requires skill to catch stray cattle or horses? Note the long running noose of the rope to catch the animal by its neck.

other buildings on the estancia. Gauchos are the people of a mixed race of Europeans and American Indians. They look after the cattle and roam about on horseback with their herds. The gauchos wear peculiar dresses. They carry long knives which are useful for cutting meat at meals and skinning dead animals on the ranch or estancia.

Great attention is paid to the rearing of best quality beef-cattle. Cattle are rounded up and sent to exporting ports, where they are

slaughtered. Meat-packing and beef-extracting factories are located in each port. No part of the slaughtered animal is wasted. The carcass is chilled, frozen or canned. The bones, blood and offal are converted into fertilizers. Hides, fats and medical vaccines from glands form the other by-products. Before the invention of the refrigerator ship, meat could not be sent over long distances. In fact, the invention of a refrigerator ship has brought about a great change in the cattle-rearing industry. Now-a-days pampas grass-lands in Argentina are one of the largest producers of meat in the world. In export of beef, Argentina now stands next to none.

Around Buenos Aires, dairy farming is also gaining in importance. In spite of the large local market, there is enough surplus of dairy produce for export.

Sheep-rearing is also an important activity of Argentina. It is one of the leading sheep-rearing countries of the world. Sheep are reared for both meat and wool, in almost every region of the country. Sheep-rearing is the main occupation of Patagonia. Here the sheep ranches are very large. Some of them are more than a thousand square kilometres in extent. Patagonia alone provides about half of Argentina's total wool clip.

In the dry western parts of Argentina are reared sheep and goat. They are taken to mountain pastures for grazing in summer and brought down to valley pastures during winter. This seasonal movement of grazing animals and their herdsmen up and down the slopes of mountains or from one climatic region to the other is known as *transhumance*.

The most valuable product of the forest in Argentina is the quebracho tree because tannin can be extracted from its bark. Tannin is a liquid used for tanning leather. The quebracho wood

is used for making railway sleepers, telephone poles and fencing posts.

The mineral resources of Argentina are limited. The mountainous north-west is rich in certain minerals. Petroleum is the chief mineral wealth of Argentina. Coal, zinc, chrome, lead and uranium are the other minerals of the country. Uranium is used in the production of atomic energy.

Most of the industries of Argentina are based on the raw materials obtained from its pastoral farming and agriculture. These industries are concentrated in the areas surrounding the city of Buenos Aires. The major industrial activities of this area are meat packing, food processing, flour milling, leather tanning and making of leather goods. The region is also known for its cotton and woollen textiles and sugar mills.

Argentina now manufactures various machines. It has set up big cement plants and oil-refineries. It also now manufactures some chemicals and medicines.

People

The total population of Argentina is over 22 million. It gives an average density of only eight persons per square kilometre. About three-fourths of the population lives in cities. Most of the people of Argentina are of European origin. Buenos Aires is the capital and principal city of Argentina. With a population of about four million it is the largest cosmopolitan city south of the equator. Most of the railway lines converge on the city. It is the main importing and exporting port of Argentina.

Trade

Beef, wheat, maize, linseed and wool are the main exports of Argentina. Its chief imports are machinery and vehicles, iron and steel, chemicals and pharmaceuticals, fuel and lubricating oils.

THE NEW TERMS YOU HAVE LEARNT *Estancia*—A large farm in Argentina used for rearing a large number of cattle *Transhumance*—A seasonal movement of grazing animals and herdsmen up and down the mountain slopes, or from one climatic region to another.

EXERCISES

Review Questions

1. Answer the following questions:
   (i) Why are pampas called the heartland of Argentina?
   (ii) Name the two important exports of Argentina
   (iii) What are the by-products of beef industry?
   (iv) Which is the highest peak in Argentina?

2. Give a single term for each of the following:
   (i) Very fine dust brought by the winds and deposited in layers one over the other.
   (ii) A large farm in Argentina used for rearing cattle on a large scale
   (iii) A seasonal movement of grazing animals and herdsmen up and down the mountain slopes and valleys or from one climatic region to the other.

3. Give a brief account of the pastoral farming of Argentina. Also, explain the factors which are responsible for the rearing of cattle for beef

4. Give an account of urban industries of Argentina and major items of its exports.

Picture Reading

5. Study the photograph XXII carefully. What suggests to you that pastoralism is very important in Argentina?

Map Work

6. In an outline map of Argentina show by different shades the regions of wheat and maize. On a second map show the regions of cattle and sheep. Now compare both the maps. What conclusions would you draw from the two maps?

Topic for Class Discussion

7. *'Pastoral Farming as against Cultivation of Crops'*

Collect information and pictures on pastoral farming and cultivation of crops in Argentina, Australia, New Zealand and India In what way do these practices differ from one country to another?

UNIT FOUR

North America: The Third Largest Continent

North America is the third largest continent standing next only to Asia and Africa. It belongs to the New World as it was discovered rather recently. The continent of North America is more than eight times the size of India, but its population is only a little more than half that of our country. This together with its huge and well-developed resources explains why the people in this continent by and large enjoy high standard of living.

North America is the most prosperous and one of the very highly industrialized continents of the world. Yet it has a very rich agricultural base. Besides extensive forests and rich farmlands, it has abundant mineral wealth, huge water-power resources and extensive fishing grounds near its coasts. It has many manufacturing industries.

North America has a diverse population. Persons of several racial groups live in this continent. The distribution of population in the continent is highly uneven.

There is a dense network of modern means of transport in North America. It consists of transcontinental railways, highways and airways.

It has also some of the busy inland waterways of the world.

Canada is a vast country with abundant natural resources and relatively few people. Canada for a long time was a producer and exporter of raw materials. Of late, it has become one of the leading manufacturing countries with a large surplus for exports.

The United States of America is a country which has made great progress, both in agriculture and industry. The country possesses huge power resources which it has used for developing its industries. It now leads the world in international trade, and in the standard of living of its people as a whole.

14

Land and Climate

THE TERMS YOU ALREADY KNOW. *Gorge*—A deep, narrow river valley with steep sides. *Tundra*—The intensely cold region within the Arctic Circle where the natural vegetation consists of mosses, lichen and stunted trees.

LOOK at the globe. You will notice that the continent of North America lies entirely in the Northern Hemisphere. Name the oceans which surround the continent. North America stretches between 7°N and 83°N latitude and between 20°W and 120°W longitude. At one place, the north-western part of North America is less than 96 kilometres from the north-eastern tip of Asia. From your map find out the name of the strait that separates the two big continents. At most points, however, the continents of North America and Asia are quite a few thousand kilometres apart.

In size, North America stands next only to Asia and Africa. It is about eight times the size of India. Compare its shape with that of South America and Africa. What similarity do you notice?

Discovery of America

The credit of discovering Americas goes to Christopher Columbus, a great Italian navigator. He was one who believed in

the roundness of the earth. Hence he thought he could reach India by an all-sea route via the west. He undertook this venture with the help of the king of Spain. In his search for a westward sea route to India he reached an island off the mainland of North America in 1492. He called these islands the 'Indies' and their inhabitants 'Indians'. In spite of his four voyages he never knew that the lands he had discovered were neither India, nor China but an entirely New World, the existence of which was never thought of. Later on, it was Amerigo Vespucci, another Italian explorer, who made it known that the lands discovered by Columbus were an entirely New World. This is how the new continent came to be known as America after his first name.

North America is a continent settled by the white people from Europe. The peoples from Spain, England and France set up colonies in the new continent. The lands round the Gulf of Mexico were colonized by the Spanish people. The English people established colonies along the mid-Atlantic coast. The French held parts of Canada and land around the Great Lakes. In course of time, the French lost their territories to the English people. In turn, even the English people had to grant complete independence to their American colonies except in Canada. Even Canada today enjoys full freedom although it continues to be a member of the Commonwealth.

Physical Features

Look at the map in Fig. 33. North America may be divided into three major physical divisions. They are the Western Cordilleras, the Eastern Highlands and the Great Central Plains.

The Western Cordilleras: The western part of the continent is a

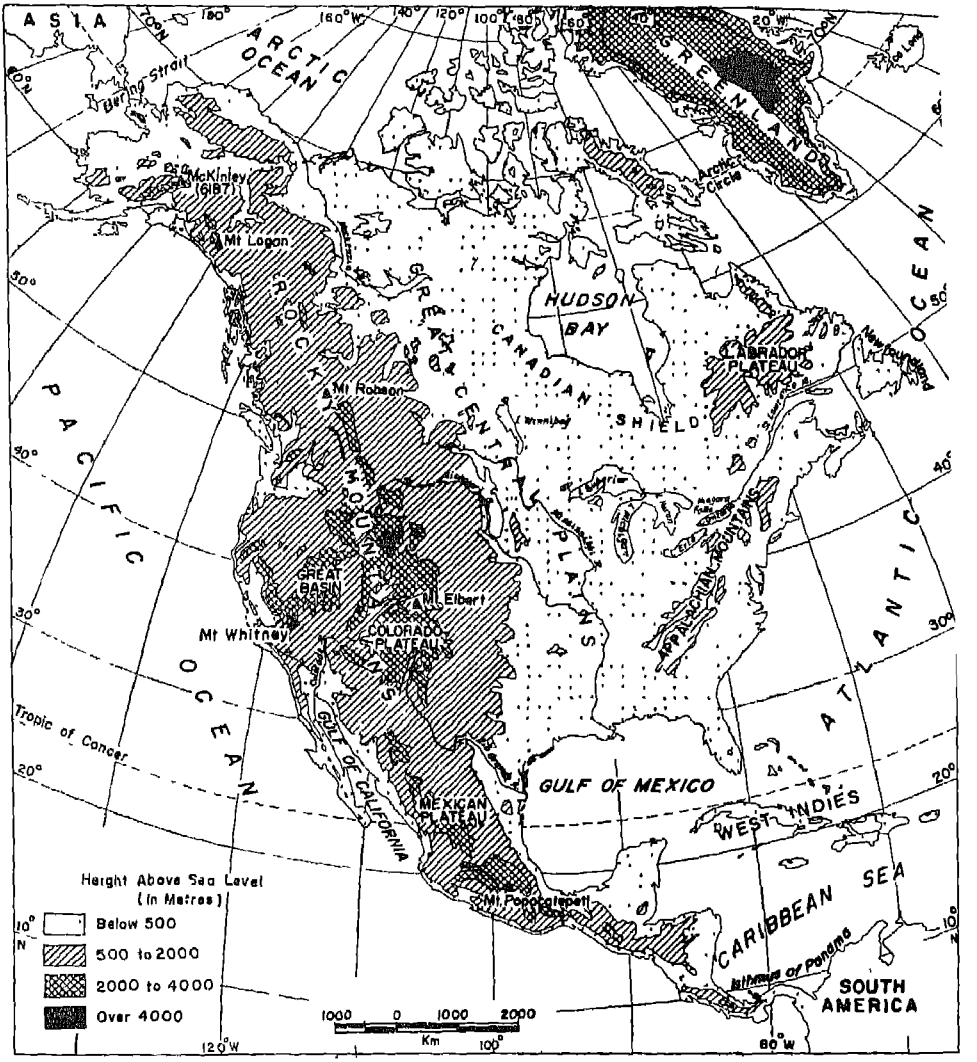


FIG 33. *Physical Features of North America*

Note the major physical divisions which extend from north to south Find the name of the biggest island in the north-east of the continent. It is the largest island in the world.

vast mountainous region known as the Western Cordilleras. They stretch from Alaska in the north-west to the isthmus of Panama in the south. These mountains extend further south into South America right up to its southernmost tip. From the map you will find that the Western Cordilleras form the back-bone of the continent. Most of the rivers of North America rise in the Western Cordilleras. The highest peak of the Cordilleras is Mt. McKinley. It is in Alaska and is 6,187 metres high above sea level.

The Western Cordilleras consist of several parallel ranges. The Rocky Mountain is the most prominent among them. The Coastal Range and the Sierra Nevada are the two other ranges. Enclosed by these ranges are a few high intermontane plateaus. The Great Basin is the largest intermontane plateau in North America. As the waters of its rivers do not reach the oceans, it forms an area of inland drainage. South of the Great Basin is the Colorado Plateau. The Colorado river and its tributaries have cut deep valleys in the soft rocks of this region. Many of the gorges at places are as much as 1,800 metres deep. Such very long and deep gorges with wall-like sides are known as *canyons*. The Grand Canyon of Colorado is the largest of its kind and is famous all over the world for its natural beauty.

It is believed that there was much volcanic activity during the formation of the Western Cordilleras. There are still many active volcanoes in Alaska and Mexico. The plateau of Columbia is made up of lavas, very much like the north-western part of the Deccan Plateau of India.

The Eastern Highlands: These highlands include the Appalachian Mountains and their extension in Labrador and Newfoundland. These mountains are far older than the Western Cordilleras. During

the long ages they have been worn down to low mountains. Mt. Mitchell which is the highest peak of the Appalachian Mountains, is just 2,000 metres above sea level.

The Great Central Plains: The Great Central Plains lie between the Western Cordilleras and the Eastern Highlands. They include the Canadian Shield and the river basin of the Mackenzie in the north. The central and southern part of this great plain is occupied by the vast low and flat river basin of the Missouri–Mississippi. The Great Central Plains rise gradually towards the Rockies. From the direction of the rivers flowing through these plains we can get an idea about the slope of these plains.

The Canadian Shield surrounds the Hudson Bay. It consists of some of the oldest rocks in the world. The Canadian Shield has been worn-down to a plain which slopes towards the Arctic Ocean.

South of the Canadian Shield there are Great Lakes of fresh water. They are Lake Superior, Lake Michigan, Lake Huron, Lake Erie and Lake Ontario. The world famous Niagara Falls are between the Lake Erie and Lake Ontario. Lake Superior is the largest fresh water lake in the world. The St. Lawrence is the important river of this region. It drains the waters of these lakes into the Atlantic Ocean. Can you tell now why these are fresh water lakes?

Climate and Vegetation

North America is a big land-mass. It extends from the tropical zone in the south to the polar region in the north. The high Rockies and the Eastern Highlands extend in north-south direction. This leaves the Central Plains open to the influences of both the cold winds from the north and warm winds from the south. The part of the

western coast in the north faces the westerlies and the south-eastern coast comes under the influence of the trade winds. Both of them are responsible for bringing heavy rains. The California current in the south-west and the Labrador current in the north-east are cold currents. Gulf Stream current in the south-east and the Alaska current in the north-west are warm currents. All these currents influence temperature and rainfall of the adjoining coastal regions. All these factors account for wide variations in the climates of the continent.

Winters are cold over much of the continent because cold northern winds can blow unhindered far down south. In the northern

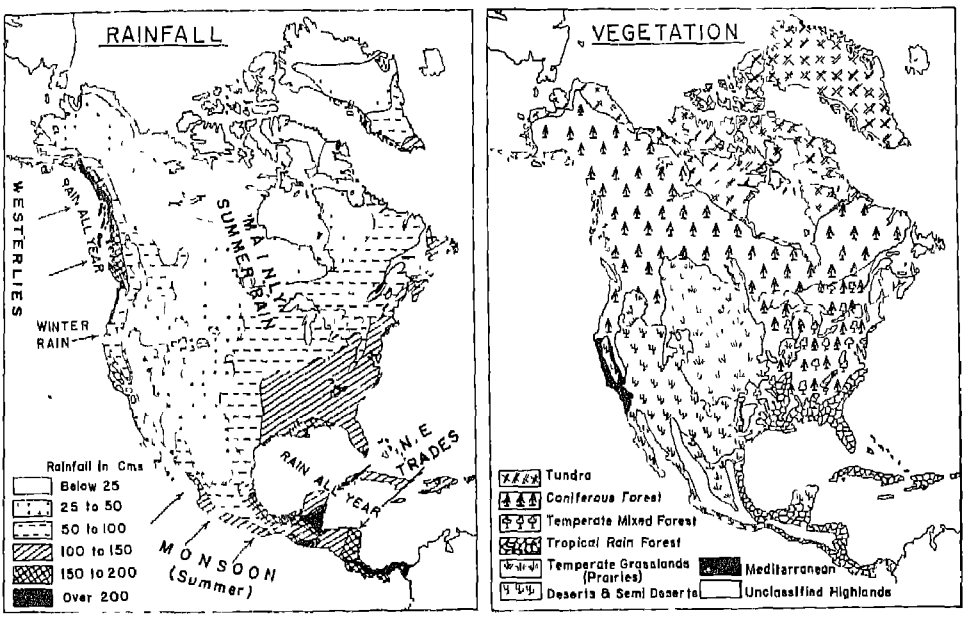


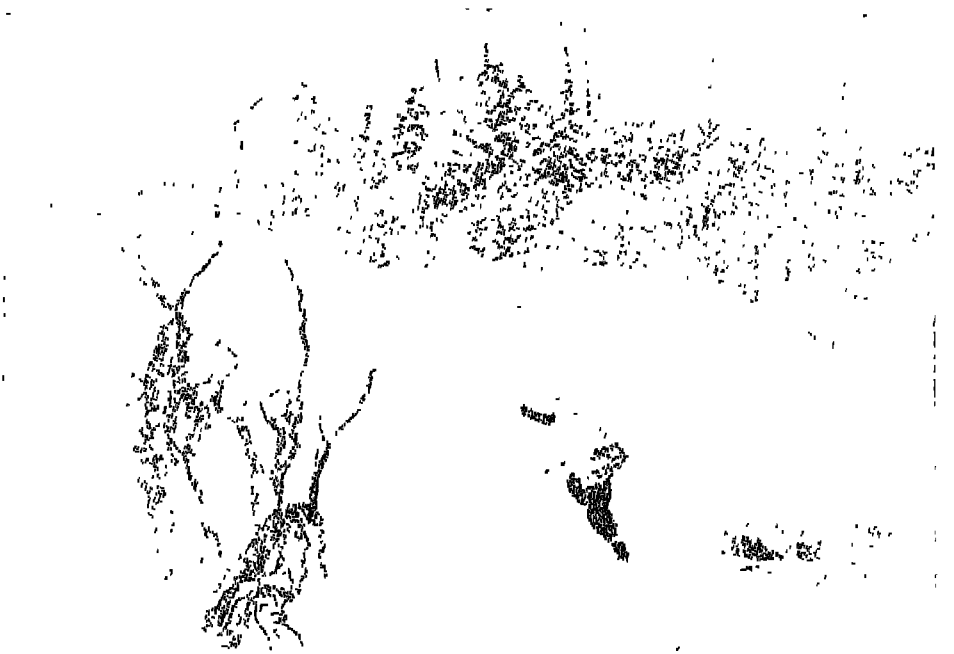
FIG. 34. *North America—Annual Rainfall and Natural Vegetation*
Note the relationship between the amount of rainfall and the natural vegetation. How does climate differ from one vegetation zone to another?

and central parts winter temperatures are many degrees below freezing-point. Cold waves are sometimes experienced even on the northern shores of the Gulf of Mexico. The western coast of Canada has mild winters, but its eastern coast has January temperatures below freezing point. How will you explain this? Note the currents hugging these two coasts.

Look at the map in Fig. 34. You will find that rainfall is abundant in three parts of the continent. The first is the west coast of Canada which faces the westerlies from the Pacific Ocean and is backed by high mountain ranges. The second comprises the eastern parts of Mexico, Central America and the West Indies, all of which face the trade winds from the Atlantic ocean. Eastern part of the United States together with parts of eastern Canada is the third area of abundant rainfall.

In the interior, rainfall decreases. It is from moderate to light. The areas of light rain include the high plains and the intermont plateaus of the west. These regions are far away from the sea and the rain-bearing winds lose most of their moisture by the time they reach there. In the south-western parts of the United States and the adjoining parts of Mexico rainfall is scanty. Deserts are confined to these areas. What makes it so? Note the relief, direction of the prevailing winds and the ocean currents in the adjoining sea for your answer.

Look at the vegetation zones of North America in Fig. 34. They are related with the different types of climate found in the continent. In the extreme north of the continent, the climate is very cold. The winters are long and severe and the summers are short and cool. The ground remains frozen for a greater part of the year. This region has the tundra vegetation which consists of mosses and



XXIII *A Hunter in the Tundra, Treading Back to his Camp*
A hunter is bringing dead wolves on a sledge back to his camp in the tundra region of northern Canada Look at the snow, natural vegetation and the clothes of the hunter What sources of livelihood can you think of in such a region?

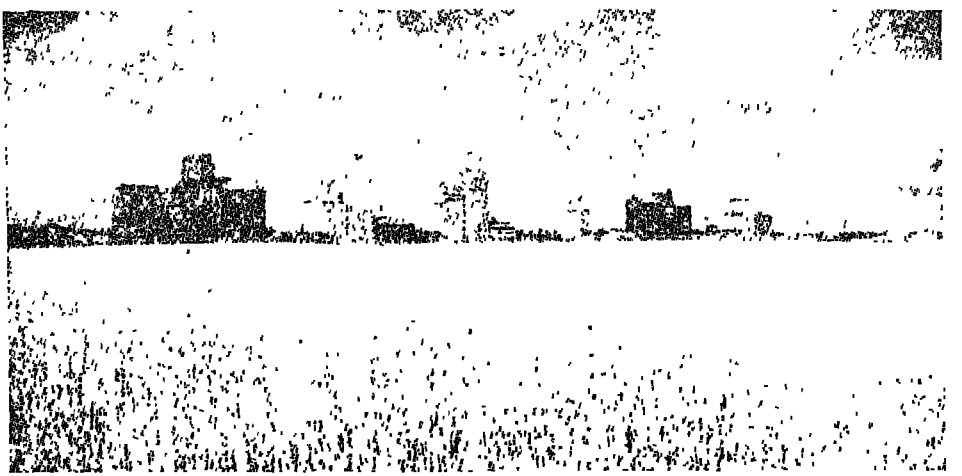
lichens, grasses, low berry-bearing bushes and dwarf trees. Polar bear, caribou, musk ox and reindeer are the main animals of this region.

Southwards, vegetation changes to coniferous forests. They stretch in a wide belt across Canada from the Atlantic to the Pacific and on the higher slopes of the western cordilleras of the United States. This region experiences severe winters and short warm summers. Rainfall is light and mostly in the form of snow. Spruce, pine, larch and firs are the common trees of these forests. Some of

the coniferous trees are very tall. The giant redwood tree of California sometimes reaches a height of over 100 metres and has a diameter of nearly 10 metres. Some of these trees are believed to be as old as 2,000 years. Do you know how to find out the age of a tree? Caribou, beaver, silverfox, lynx, mink and timber-wolf are the common animals inhabiting this region.

South of the coniferous forest is a belt of mixed forests. These forests contain the coniferous as well as broad leafed deciduous trees. The deciduous trees shed their leaves in winter. Oak, birch, maple and chestnut are some of the hardwood trees. Pine, fir and cedar are the common conifer trees yielding softwood. Large areas of these forests have been cleared to bring them under the plough.

In the greater part of Central America, much of the eastern coastal belt of Mexico and West Indies rainfall is plentiful and



XXIV. *A Bumper Wheat Crop Ready for Harvest*
Look at the vast wheat field in the Canadian prairies which was once tree-less, level grass-land In the background is a chain of grain elevators where wheat is stored. Why are they constructed along the railway line?

temperatures are always high. Natural vegetation of this region, therefore, consist of tropical forests. Palms, mahogany and logwood are some of the common trees of these forests.

Grass is the only natural vegetation of the Central Lowlands and the interior plains. These extensive treeless grasslands of temperate latitudes in the interior of North America are known as *prairies*. Whereas the typical steppes of Asia lie in the semi-arid zone, the typical prairies of North America belong to the semi-humid region. Although both of them form a continuous mat of grass on the ground, the prairie grasses are considerably taller than the steppes. This region is known for its extreme climate, that is, it has cold winters and hot summers. Rainfall is light and mostly occurs in summer.

The extreme south-west of the United States and north-western Mexico constitute a hot rocky and sandy desert. There is hardly any natural vegetation, except prickly pear and several varieties of cactus plants. Peccary is the main animal of the desert region.

The Mediterranean type of climate is found on the west coast that lies between the latitudes 30° N and 40° N. It includes part of California. The summers are hot and dry and winters are wet and mild. The westerly winds bring rain only in winter when they shift towards the south. You have learnt that there is a seasonal movement of the wind belts. It does not rain in summer since the westerlies shift to their original position further north. There is plenty of sunshine in summer, the skies being cloudless.

The natural vegetation of this region consists of olive, Mediterranean pine and cork oak trees. Most of the trees and plants have to guard against the summer drought. Hence Nature has provided them with long roots to collect moisture from the deep subsoil. Their

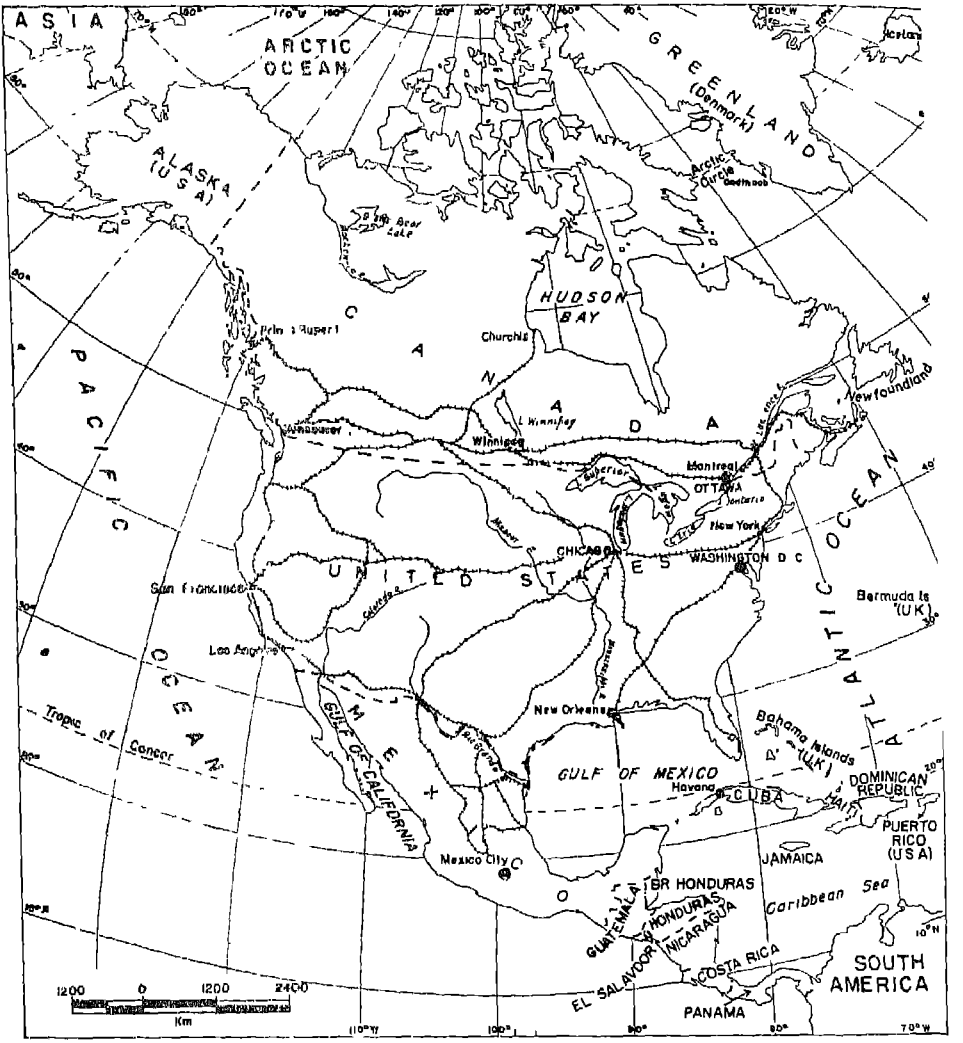


FIG 35 *Political Divisions of North America*

North America consists of some of the large countries of the world. What are they? Note the capital cities of the three large countries.

bulky trunks and thick leaves help to store moisture. Exceptionally thick barks and shining small leaves help to resist transpiration.

Political Map of North America

North America consists of a few countries of which two are very large. Find out their names and rank them according to their size. What parallel of latitude marks common frontier between these two big and friendly neighbours? What common language is spoken in these countries? What made it so?

Look at the map in Fig. 35 and name the big island country of the north-east. It is ruled by Denmark. Name the country through which passes the Tropic of Cancer. Look at the Gulf of California. Which country encloses it? Find out the largest island in the Caribbean Sea. Which is the capital city of this island country? Do you see the isthmus connecting two big land-masses? Name the country in which it is situated.

THE NEW TERMS YOU HAVE LEARNT: *Canyon*—A gorge of a very large size. It is an I-shaped valley. *Prairie*—An extensive area of temperate grassland occurring in the interior of North America. These treeless lands in the semi-humid regions possess a continuous mat of relatively tall grasses.

EXERCISES

Review Questions

1. Answer the following questions:
   (i) Why does rainfall occur only in winter in the regions of the Mediterranean type of climate?
   (ii) Which are the five Great Lakes of North America?
   (iii) Why do the trees in the regions of the Mediterranean type of climate have deep roots, thick bark, short and shining leaves?
   (iv) Name the four ocean currents which influence the climate of North America.

2. Distinguish between:
   (i) A gorge and a canyon.
   (ii) Prairies and steppes.

3. Divide North America into three major physical divisions and state how each division differs from the other.

4. Name the seven natural vegetation belts of North America. Take any three belts and explain how the vegetation in each belt depends upon its climate.

5 Prepare a table under three major categories—(a) Vegetation belt, (b) Typical Vegetation and (c) Animals belonging to the same vegetation belt as indicated from the words given below:
(i) moss; (ii) short grass; (iii) caribou; (iv) lichen; (v) spruce; (vi) beaver; (vii) maple; (viii) cactus, (ix) olive; (x) redwood; (xi) silver fox; (xii) mahogany; (xiii) prickly pear; (xiv) Cork oak; (xv) Douglas fir and (xvi) palm.

Vegetation belt	Typical Vegetation	Animals
Tundra	Moss, lichen	polar bear
Coniferous forests		
Mixed forests		
Tropical forests		
Mediterranean		
Prairie		
Desert		

Picture Reading

6. Study the photographs XXIII and XXIV showing two distinct types of natural regions. State the differences between the two in respect of (a) terrain, (b) natural vegetation, (c) temperature, (d) precipitation, (e) the growing season and (f) the means of livelihood.

Map Work

7 Study the map of North America from your atlas and find out the following:

(i) *The mountains:* The Brooks Range and the Sierra Nevada.
(ii) *The rivers:* Colorado and Rio Grande.
(iii) *Inland waterways:* The St. Lawrence Seaway; The Panama Canal.
(iv) *The countries:* Cuba, Gautemala and Jamaica.
(v) *Cities:* The capital cities of the United States and Canada

Topic for Class Discussion

8. '*Discovery of America by Columbus*'

Collect information on this topic and relate to the class the story of the discovery of America by Columbus. Read: 'Shipboy with Columbus',

15

Using Wealth Provided by Nature

THE TERMS YOU ALREADY KNOW: *Extensive Agriculture*—A farming practice in which only a few farmers are able to till large farms mainly with the help of machines. *Agricultural Resources*—Gifts of nature that include fertile soils, ample water for irrigation and favourable climatic conditions for the growth of plants.

NORTH America is the most prosperous and a very highly industrialized continent of the world. This is partly because of its vast natural resources. These provide its people to earn their living in various ways. The fertile plains, extensive grasslands and forests, abundant mineral and water-power resources and extensive fishing grounds around its coasts are the valuable natural resources of North America. It must also be remembered that the people of this continent are industrious. They have made use of their knowledge and technical skills to develop their resources systematically and rapidly.

Agricultural Resources

Very large parts of North America are occupied by permanent snow and ice, mountains and high plateaus, and by deserts and forests. As a result, only about one-tenth of the total area of North America

is under cultivation. Even so, North America is very rich in its agricultural resources mainly because of its fertile and well-watered central plains.

Soils of the central plains are fine, deep and fertile. The uppermost layer, or *topsoil* contains decayed leaves, plant stems and roots and the bones and waste of animals. The decayed remains of plants and animals in the soil are known as *humus*. This organic material present in the soil forms the valuable food for plants which they can easily absorb. Moreover, the central plains, especially in the south, have a very long growing season.

Extensive agriculture is the chief farming practice in North America. Farms are very large and most of the farm work is done by machines. Farmers adopt scientific methods of farming. As a result, a very small proportion of population engaged in farming is able to produce plenty of food, leaving enough surplus for export. A wide variety of crops are grown in North America. Maize, wheat, oats and barley are the important cereals of the continent. Cotton, tobacco, soyabeans and linseeds are the main non-cereal crops.

In America, maize is called 'corn'. It was grown there by the Indians long before the arrival of the European settlers. Maize plant requires fertile soil. It grows well in hot climate where days are hot and nights are warm. It requires frequent showers during the summer months. A little less than half of the world's crop of maize is grown in North America alone. Maize is the staple crop of Mexico. In the United States much of corn produced is used for feeding pigs and cattle. It is thus converted into meat in a big way.

Wheat was brought into America by early white settlers. Conditions for wheat crops are ideal in the prairie region of Canada and the United States. The soil in the prairies is very fertile. It is

dark and several metres deep. The land is undulating but flat enough for the use of machinery.

The United States and Canada are the two important producers of wheat in the world. Both the countries export wheat in large quantities. North America alone produces about one-fifth of the world's wheat. Most of the wheat farms are very large. The wheat is harvested and threshed by a machine called a *conbined harvester*. A farm practice, wherein most of the work on farms is done by machines, is called *mechanised agriculture*. Very few people but huge amount of money are required in such a case to look after very large farms.

Like wheat, oats and barley are the other two cereal crops introduced into North America by the European settlers. North America accounts for two-fifths of the total production of oats. Potato on the other hand is an important food crop that originally belonged to North America.

In North America cotton is grown mainly in the southern part of the Mississippi river basin. This region possesses fertile soil. Its summers are warm with moderate rainfall. Cotton grows well in this region because its climate is free from frost. The clear skies with abundant sunshine help the cotton bolls to ripen quickly. All this explains why the region is highly suitable for cotton growing. North America is the leading producer of cotton in the world. It produces about one-third of the world's cotton. The main cotton producing countries are the United States and Mexico.

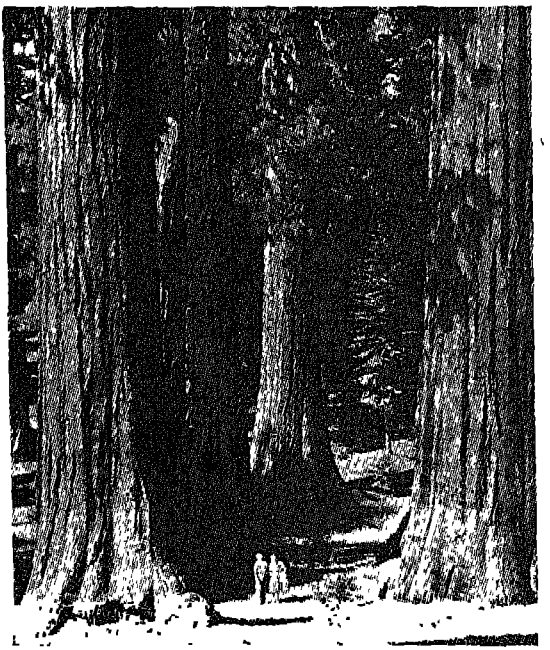
North America is the home of tobacco. The American Indians used tobacco for smoking long before the discovery of America by the white people. North America accounts for about 30 per cent of the world's tobacco. It is chiefly grown in the United States.

Extensive prairie grasslands and mountain pastures are now used for rearing animals like cattle, sheep and horses, all of which were introduced into North America by the white settlers. Cattle, pigs, sheep and lamb are reared for their various products. Cattle for milk are reared in humid regions, whereas cattle meant for meat do better in relatively dry areas. North America accounts for about one-fourth of the total cow milk produced in the world. It surpasses all the other continents in the production of meat. The United States alone provides about one-fifth of the total meat produced in the world.

XXV. *Dairy Cattle Grazing in the Open Pastures*
These Holstein cows are grazing on the pastures of south-eastern Canada. This famous milch cow on an average gives nearly 3200 kilogrammes of milk a year.

Forest Wealth

North America has three kinds of forests: the coniferous forests, the deciduous forests and the tropical forests. The coniferous forests of North America are very extensive. In extent they stand next only to those of the taiga in Siberia. Of the total softwood cut every year in the world, North America alone accounts for its one-third. The softwood forests are confined to a greater part of Canada and to the slopes of Rockies extending into the United States.



XXVI. *The Giant Redwood Trees*
Look at the giant redwood trees of the coniferous forests of California in the United States. Can you judge the size of the trees?

Douglas Fir and white pine are used for making floor boards, doors and window frames. Large quantities of wood of the conifers, especially spruce, are used in manufacturing wood-pulp and paper.

Cellulose, resin and turpentine are also obtained from softwood. Cellulose obtained from wood is used in manufacturing rayon cloth.

The deciduous trees grow in the parts of the cool temperate climate both of the eastern and the western margins of North America. They grow along with softwood coniferous trees in the mixed forests. The trees like white pine and spruce yield pulp for newsprint. Trees like oak, beech and willow are used for making furniture. The sap of maple trees is sweet and yields sugar.

Trees of the tropical forests of Mexico, the Central America and the West Indies yield very hard wood. In Cuba, hardwood obtained from mahogany and cedar is used for making cigar boxes. Hardwood, obtained from certain other trees, is used for railway sleepers. Chickle trees in British Honduras yield 'Chickle gum'. It is used for making chewing gum which is very popular in America.

Mineral Wealth

North America possesses a wide variety of minerals. Most of the minerals of the continent are concentrated in a few areas. The Canadian Shield has huge deposits of minerals such as nickel, platinum, zinc, lead, gold, silver and copper. The Rockies are also known for the deposits of several minerals such as copper, uranium, gold, zinc and lead. The Appalachian is another region which is noted especially for coal-fields. The Central Plains and the Gulf Coast are especially rich in deposits of mineral oil and natural gas.

Look at the map and find out where each of these mineral ores are found. The United States is very rich in iron-ore. Its vast deposits are found around the western half of Lake Superior. There are several hill ranges made of iron-ore only. Canada also possesses iron-ore in a few areas. Copper is found in the United

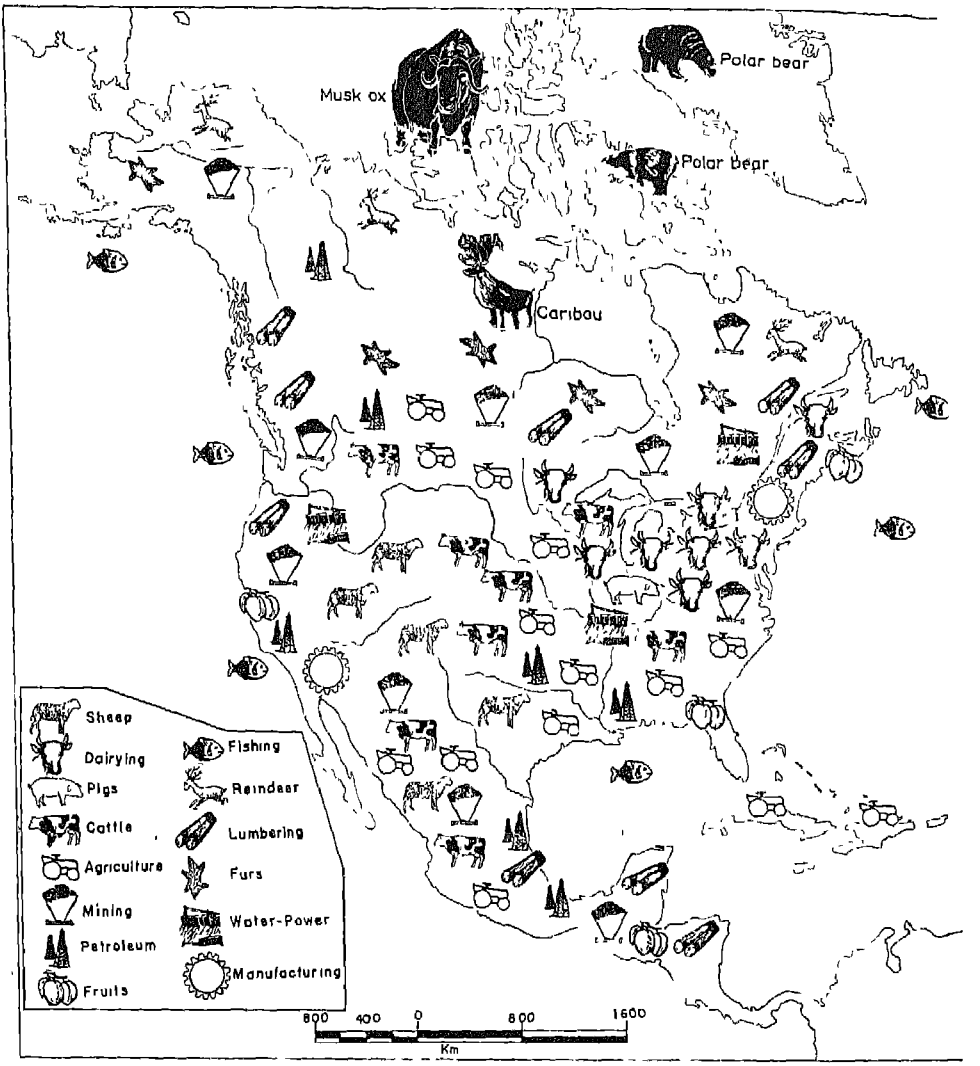


FIG. 36 *North America—Land Use*

Note the different uses to which the land is put in North America. Why is the region around the Great Lakes devoted mainly to industries?

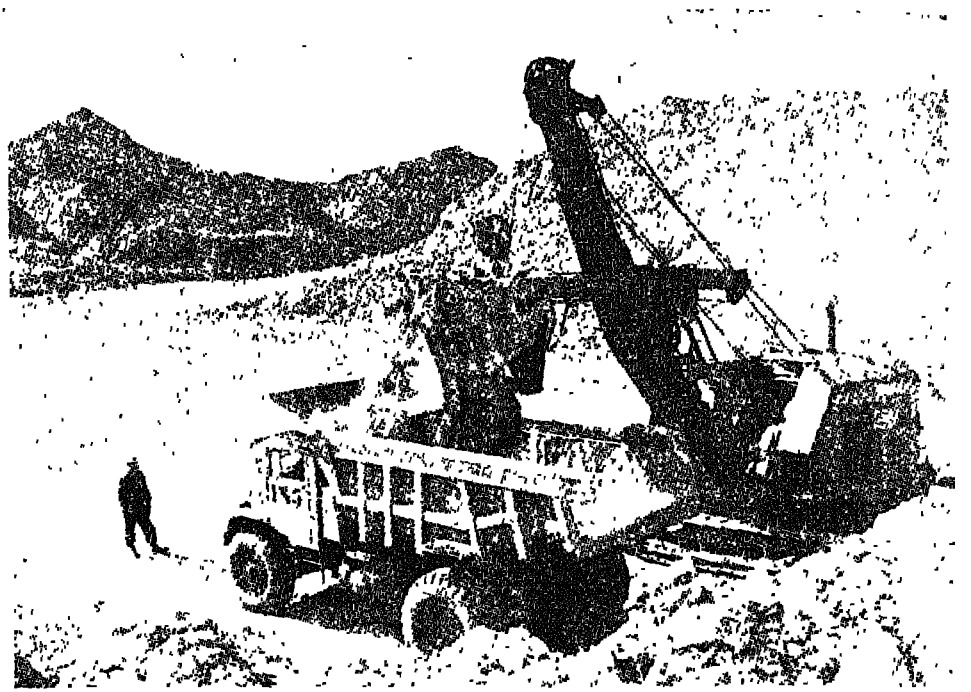
States and Canada. The United States is the leading producer of copper in the world. About one-third of the world's zinc and three-fourths of the nickel are produced in North America. In both nickel and zinc, Canada is very rich.

North America has large deposits of mineral ores of precious metals, namely gold and silver. Canada leads in the production of gold among the countries of North America. The United States and Mexico also have some gold deposits. Mexico is the largest producer of silver in the world and the United States ranks third. About half the world's silver is produced in North America.

Phosphates and potash are the non-metallic minerals found in the continent. The United States has large deposits of these minerals. They are highly useful for manufacturing chemical fertilizers.

North America possesses very large deposits of coal and petroleum. Look at the map and find out where coal and petroleum are found. North America produces a little less than one-fourth of the world's total coal and a little less than one-third of the world's total oil. In oil, the United States is the largest producer in the world and in coal also it is one of the world's leading producers. Appalachian mountains have large coal-fields spread over several hundred square kilometres. Much of the coal is used for producing electricity. Electricity produced by burning coal or oil is known as *thermal electricity*. Electricity produced from the waterfalls is known as *hydel-power* or *hydro-electricity*. The natural gas is obtained from oil wells and is distributed through pipelines. The United States is the leading producer of natural gas in the world. Canada and Mexico also produce both oil and natural gas.

North America is very rich in water-power resources. The



XXVII *Asbestos being Mined in Canada*
Look at the huge shovel worked by a crane It has scooped up asbestos from the surface mine and is being loaded into a truck. What is a surface mine?

continent produces hydro-electricity on a very large scale. The St. Lawrence river, the Appalachian region and the valleys of the Tennessee, the Colorado and the Columbia rivers provide numerous sites for developing hydro-electricity on a large scale. The Niagara Falls are a great source of water-power in North America. Several high dams have been constructed across the rivers Tennessee, Colorado and Columbia.

Harvest of the Sea

The oceans surrounding North America abound in fish. The indented coastline provides numerous natural harbours. The sea around north-eastern parts of the continent is shallow and fish are plentiful in these waters. Such vast areas of shallow seas, near the coast, abounding in fish are known as *fishing banks*. The Grand Banks near the coast of Newfoundland are famous for fishing. Fish are caught in large numbers in the Pacific Ocean, off the western coast of the continent from Alaska to California. The United States is the third largest fishing country in the world.

Fish are consumed while they are fresh. But they are also preserved in a number of ways such as by freezing, salting, drying, smoking and canning. Each of these have a taste of their own. Besides fish, many other products such as oysters and sponges are also obtained from the sea. Whales and seals are mammals found in the sea. The fat of the whales and the fur of the seals are important commercial products. Fish-liver oils are an excellent source of vitamins and proteins that people need to keep them healthy. Pearls come from oysters. Fish and fish waste make good fertilizers.

THE NEW TERMS YOU HAVE LEARNT: *Humus*—The decayed remains of plants and animals in the soil useful for plant growth. *Mechanized Agriculture*—An agricultural practice wherein most of the work on the farm is done by widespread use of machines, big and small *Fishing Banks*—Vast areas of shallow seas near the coast abounding in fish.

EXERCISES

Review Questions

1. Answer the following questions:
   (i) Why is the growing season longer in the southern parts of the Central Plains?
   (ii) Which are the major cereal crops of North America?
   (iii) Name five important minerals of North America.
   (iv) What are the four different ways of preserving fish?

2. Make out correct pairs from the two columns:

(a) The thin surface layer on the earth, comprising mineral particles and decayed material of plants and animals.	(i) Humus
(b) The organic matter present in the soil in the form of the decayed remains of plants and animals.	(ii) Topsoil
(c) The uppermost layer of the soil which is cultivated.	(iii) Agricultural resources
	(iv) Soil

3. Give one term for each of the following statements:
   (i) A machine that harvests cereal crops and threshes out the grains from the same.
   (ii) Vast areas of shallow seas near the coast abounding in fish.

4. Listed below are a few products derived from the gifts of nature such as soil, animals, plants and minerals. Classify them and group them under the following categories—(i) Agriculture, (ii) Pastoralism, (iii) Forestry, (iv) Mining and (v) Harvest of the sea.
   (i) Sponge, (ii) wheat, (iii) dates, (iv) wool, (v) linseed oil, (vi) seal skin, (vii) turpentine, (viii) cellulose, (ix) kerosene, (x) cod-liver oil, (xi) natural gas, (xii) diamond, (xiii) meat, (xiv) gum, (xv) resin, (xvi) olive oil, (xvii) jute and (xviii) phosphate.

5. Give an account of the important minerals and their distribution in North America.

6 Write briefly about five agricultural crops of North America Specify the climatic conditions favourable for each one of them

Picture Reading

7. Study the photographs XXV, XXVI and XXVII carefully. In what three different ways is the land being used? Can you think of any other way in which it can be put to better use?

Map Work

8. On a big outline map of North America paste pictures of animals and crops found in different areas.

Topic for Class Discussion

9. '*The Uses to which the Land can be Put*'

Collect information and pictures on this topic. List the major possible uses of land. How is the most profitable use of land determined? Also find out how land is misused.

16

People and Means of Transport

THE TERMS YOU ALREADY KNOW: *Time Zone*—A longitudinal division of 15° each within which the local time of a central meridian serves as the standard time for the whole area *Highways*—Big and important roads connecting distant places.

THOUGH North America is about eight times the size of India, its population is a little more than half that of India. The total population of the continent is a little less than 290 million. This gives it an average density of about twelve persons per square kilometre.

Find from the population map of North America the regions of sparse population. Large areas of the northern part of the continent have a density of population less than two persons per square kilometre. In the central lowlands there are no big cities though population is fairly moderate. It is mainly an agricultural region. The Western Cordilleras with intermont dry plateaus have very sparse population.

You will notice that the most thickly populated parts of North America are the eastern coastal lands, and the areas around the Great Lakes. Out of the twenty big cities in North America, fifteen are

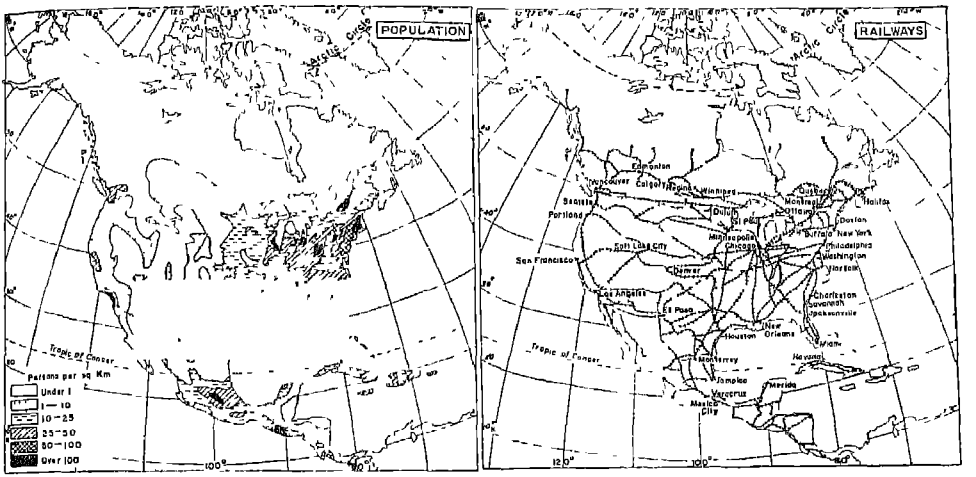


FIG. 37. *North America—Density of Population and Railways*
Note the areas of dense population and good railway network in North America. Why is the population of these areas so dense?

situated in these parts. Find from the map how many of these are ports on the Atlantic Coast and how many of them are on the shores of the Great Lakes. The eastern coastal region enjoys a cool climate, has rich coal deposits, adequate power resources and many industries. There are excellent transport facilities, focussing on big port cities. Moreover, this is the region that was first to be settled by the Europeans.

In Mexico, the thickly populated part is the central region round Mexico City. The islands of West Indies are the most densely populated part in the whole continent.

In Canada and the United States, the population is unevenly distributed. More than eighty per cent of the population of Canada lives within a few hundred kilometres from its border with the United States. The eastern half of the United States is heavily

populated, but the most densely populated part of the country is its north-eastern region.

North America is a newly discovered continent. Before the arrival of the Europeans, American Indians and the Eskimos were the sole inhabitants of North America. The Indians consisted of various tribes. Most of them led a nomadic life. But some of the tribes knew the art of agriculture and grew maize and potatoes. They used to smoke tobacco. They were skilful hunters. Indians of Mexico and Central America were more civilized and had a well developed civilization as can be known from their old cities, kingdoms and huge stone temples.

Today, the bulk of the population of North America consists of people from Europe. Then there are Negroes who were brought

XXVIII. *Mexican Folk Dance*
These Mexicans are dancing to celebrate their *charro* festival in Mexico City. Look at their colourful dresses and musical instruments

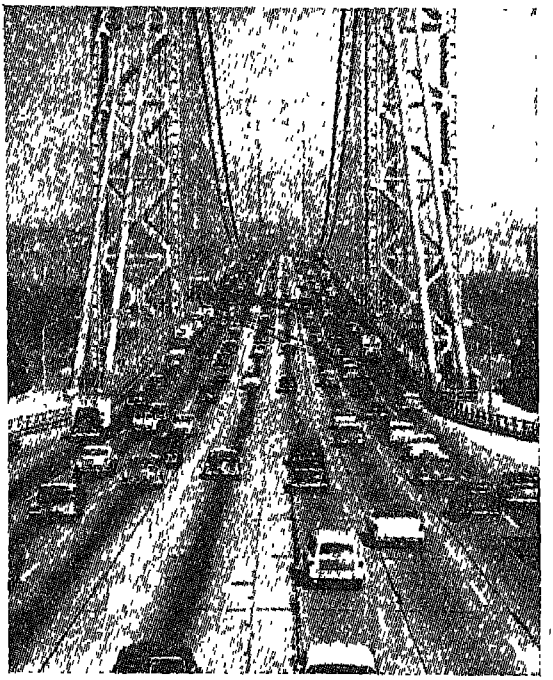
from Africa by the white settlers to work on their farms and plantations. Of late, some people from Asia have also settled in North America. In Canada and the United States, the population is predominantly white. In Mexico and Central America, the Mestizos are in greater number. In the islands of the West Indies, except Cuba, most of the people are Negroes.

Means of Transport

North America has a very well developed transport system. It possesses a dense network of roads and railways. Much of its trade is carried by coastal and inland waterways. Today almost all its cities are interconnected with airways.

Land Transport: Today, North America, especially the southern part of Canada and the most part of the United States, has numerous and well surfaced roads and highways. A very large number of people have their own motor cars. They are the most popular means of daily transport. People covering long distances by their motor cars halt at motels. A *motel* is a kind of hotel which provides bedrooms, a kitchen and space for parking cars. Many of the roads are wide enough to allow four or even six cars to run abreast in one direction. These broad roads are meant for fast running vehicles. In order to avoid delays, level crossings on such roads are avoided by providing overhead links. On these links all the vehicles move only in one direction. These roads are known as *freeways* or *superways*.

If you look at the transport map of North America you will notice that there is a dense network of railway lines in the eastern half of the United States. Can you think out the reason for this? Nothing surpasses railways as a means of transport on land for carrying



XXIX *George Washington Bridge*
This gigantic bridge on the Hudson River connects New York city with the mainland The bridge is an example of a high engineering skill Note how cars are moving in rows.

heavy freight. They carry raw materials to industrial areas and distribute manufactured goods inside the country or send them to the ports for export. They are also useful for transporting foodgrains and other goods. The passenger traffic on the railways has been decreasing gradually as they face competition from motor cars and aeroplanes especially in Canada and the United States.

There are several transcontinental railways in Canada and the United States. The Canadian Pacific Railway connects St. John in New Brunswick with Vancouver on the Pacific Coast. The Canadian National Railway connects Halifax in Nova Scotia to Prince Rupert in British Columbia. Note that both the lines running

from coast to coast are not far from the southern border of Canada. How will you explain this?

The railway lines are very useful for carrying wheat, timber, wood-pulp and minerals. The transcontinental journey is of nearly 4,800 kilometres and takes about five days to complete it by a very fast train. The train has to pass through five different time zones.

In the United States, the transcontinental railways link the Atlantic coast with the Pacific coast, a distance of about 5,000 kilometres. The chief terminus of railways in the United States is Chicago. It is the world's largest railway junction. Look at the map and find out what makes this lake city and an inland sea port such an important railway junction? St. Louis, Philadelphia, New York, New Orleans, Los Angeles are the other important railway junctions. A railway train running between New York and San Francisco takes five days for the journey.

Waterways: North America has many good ports. Most of them are on the Atlantic Coast. Montreal, Boston, New York, Philadelphia, Baltimore and New Orleans are some of the leading ports on this coast. Vancouver, San Franscisco and Los Angeles are the major ports on the Pacific coast. Find out from the map these ports and main ocean-routes connecting them with one another.

Inland Waterways: North America possesses large navigable rivers like the Mississippi and the St. Lawrence. The five Great Lakes together with St. Lawrence form the largest and the busiest inland waterway in the world.

Look at the map. You will find that the Great Lakes are connected by large canals with the river Illinois—a tributary of the Mississippi, and the river Hudson. They also connect the industrial city of Pittsburg. The canals between the lakes avoid rapids

between them. Through the St. Lawrence Seaway—jointly developed by Canada and the United States—large ocean going steamers can go to inland ports like Chicago and Detroit. The Lake Superior alone provides more than 1,500 kilometres of waterway. This distance is almost equal to the distance between Delhi and Hyderabad in Andhra Pradesh.

The inland ports of the lakes handle enormous goods traffic. More than two-thirds of all the inland water transport is carried by the Great Lakes.

The Panama Canal lies between the continents of North and South Americas. It connects the two great oceans—the Atlantic and the Pacific. It is known as a gateway to the Pacific Ocean. It is constructed, owned and controlled by the United States of America. It is 65 kilometres long, 30 to 90 metres wide and 12 metres deep. Locate the position of the port of Colon and Panama on the map.

The level of the canal is nearly 25 metres above sea level. This has made it necessary to construct locks in the canal to raise and lower ships.

In a river or a canal there is an open tank with doors on either side. It can be opened at either end to let water in or out. By pumping water from the canal into the lock, the level of water in the tank is raised. Similarly, the ship is lowered by pumping out water from the tank. Thus a limited portion of a canal or a river enclosed by gates with sluices to enable ships to be raised or lowered from one water level to another is known as a *lock*. Each lock in Panama canal is 300 metres long and 30 metres wide. There are three locks at each end of the Panama Canal.

It takes about eight hours to pass through the Canal. The

ship passing through the Canal is hauled by locomotives, running along the banks. These engines are known as *mules*.

The Canal was opened in 1914. The Canal is of commercial and strategic importance. Ships passing through the Canal avoid a far longer and troublesome journey round the Cape Horn. A ship going from New York to San Francisco through the Panama Canal now saves a distance of 12,640 kilometres.

Airways: The aeroplane is an important means of travel in North America. Most of the cities in America are linked by airways.

There are more than nine thousand good airports in America. Considering the high standard of living in America, air travel cannot be said to be costly. The Kennedy Air Port in New York is the busiest international air port in the world. Locate other important airports on the map.

THE NEW TERMS YOU HAVE LEARNT: *Motel*—A kind of a hotel which provides people with facilities such as bedrooms, a kitchen and a parking space for their motor cars *Freeways*—Wide highways on which crossroads are avoided by providing overhead links to ensure speedy traffic *Lock*—A stretch of water in a canal or a river enclosed by gates with sluices to enable ships to be raised or lowered from one water level to another.

EXERCISES

Review Questions

1. Answer the following questions:
   (i) Name the four important races of people living in North America.

(ii) Why are the native people of America called Indians?
(iii) Name the two port cities on the Panama Canal and the oceans on which they are situated.
(iv) Name the two transcontinental railways of Canada.

2. Complete the following statement with the most appropriate ending:
During the transcontinental railway journey from St. John to Vancouver a traveller has to adjust his watch several times because
(i) the railway line passes through several countries.
(ii) it covers a very long distance
(iii) it crosses several longitudes.
(iv) it takes about five days to complete the journey

3 Give one term for each of the following.
(i) A longitudinal division of 15° within which the local time of a central meridian serves as the standard time for the whole region.
(ii) A kind of 'drive-in' hotel which provides facilities such as bedrooms, a kitchen and a parking space for motor cars to the people who travel long distances in their cars.
(iii) Wide highways on which crossroads are avoided by providing overhead links to ensure speedy traffic.
(iv) A stretch of water in a canal or river enclosed by gates with sluices to enable ships to be raised or lowered from one water level to another.

4. Which parts of North America are very densely populated? Why are they so ?

5. Give an account of the inland waterways in North America and their importance to trade and industry.

Picture Reading

6. Study carefully the photographs X and XXIX Compare and contrast the two bridges—the Sydney Bridge and the George Washington Bridge.

Map Work

7. In an outline map of North America show the important railways and the major sea-routes. Paste on the sea-routes pictures of goods moving along them.

Topic for Class Discussion

8. *'The Panama Canal and the Suez Canal'*

Divide the class into two groups, one for the Panama Canal and the other for the Suez Canal. Let each group talk about location, length, width, depth, level, year of construction, number of ships passing daily and the countries served by its canal. At the end, list the points of similarities and differences between the two.

17

The Land of Huge Resources and A Small Population

THE TERMS YOU ALREADY KNOW: *Indented Coastline*—A long and highly zigzag coastline with alternate creeks and capes or bays and headlands.

CANADA is the largest American country in size and second largest country in the world next only to the Soviet Union. It stretches from the Atlantic Ocean on the east to the Pacific Ocean on the west. From the United States in the south it extends far beyond the Arctic Circle. But its population is very low in proportion to its size.

Canada has very rich and varied natural resources such as forests, grasslands, fertile plains, minerals, fisheries and water-power resources. In spite of their small population, they have developed their vast natural wealth with hard labour and scientific approach. As a result, today they enjoy a high standard of living.

Study carefully the map of Canada. Find out its latitudes and longitudes. Note that Canada has a common land frontier with the United States. It is said to be the friendliest frontier as the two countries have very cordial relations. Find out the latitude which,

for a greater part, marks the common frontier between Canada and the United States. Northern part of Canada consists of a great archipelago. Locate these islands on the map. The coastline of Canada is highly indented and has many good harbours on both the Atlantic and the Pacific shores.

Relief

The dominating physical feature of Canada is the Canadian Shield. It covers almost half of Canada. Like Siberia it is a low plateau region made up of old rocks. A large part of it is covered with numerous lakes and swamps. Its northern part remains covered with snow and ice. Towards the south it is occupied by coniferous forests. Underneath its surface lie the huge deposits of metallic minerals.

South and south-east of the Shield are the lowlands of the Great Lakes and the St. Lawrence river. Much of this land has been brought under the plough.

East of the Canadian Shield are the Highlands or Plateaus of Labrador Peninsula. They are really the extensions of the Appalachian mountains. West of the Canadian Shield lie the Central Plains, known as the prairies. These plains are mostly flat and rise gradually towards the Rockies. Much of the Canadian wheat is now grown in this part. The Westernmost region consists of the Rocky Mountains, high plateaus and the coastal mountain ranges.

The St. Lawrence is the most important river of Canada. Flowing out of the Great Lakes, it falls into the Atlantic. It provides one of the busiest inland waterways of the world. Locate the river Mackenzie on the map. Which Canadian rivers enter into the United States before they drain into the Pacific Ocean?

Climate and Vegetation

As most of Canada lies north of 50° N latitude, its climate is generally cold. Its summer temperatures in some areas are fairly high, but winters as a rule are extremely cold. Winter season in the south lasts for about seven months. In the north, it may be as long as eleven months. The growing season is thus very short even in the south.

In northern parts of the country, very strong and biting cold winds blow in winter. They are accompanied with a heavy snowfall. One finds it difficult to see beyond a few metres. Such very strong and bitterly cold winds accompanied with snow storms are called *blizzards*. They are common in polar and sub-polar regions during winter.

Cool summers and mild winters prevail only on the Pacific coast of Canada. This coastal region is warmed by the waters of the warm North Pacific Drift. Moreover, the region comes under the influence of the rain-bearing westerlies.

The westerlies blowing over the Pacific coast cause heavy rainfall on the western slopes of the Cordilleras. After crossing the Rockies, they give very little rain on the eastern slopes of the mountains and on the Central Plains. Thus the eastern slopes of the Rockies and the plains of the prairies lie essentially in the rain shadow area.

The major vegetation belts of Canada are the tundra, the taiga and the prairies. Find from the map the regions included in each belt. The tundra occupies nearly a fourth of the country in the north. Which is the common vegetation of the tundra region?

South of the tundra region lies the region of extensive taiga forests. This region is very large and occupies nearly two-fifths of the total area of Canada. This area is bigger than the total area

of India. Which are the most common conifers in Canada? Do you remember the name of the tall and very old trees found along the slopes of the Coastal Range?

The grasslands of the prairies extend from Lake Superior up to the foothills of the Rockies. Much of this grassland, especially in the east, has now been converted into wheat-fields.

Economic Development

Agriculture, lumbering, fishing, mining and manufacturing

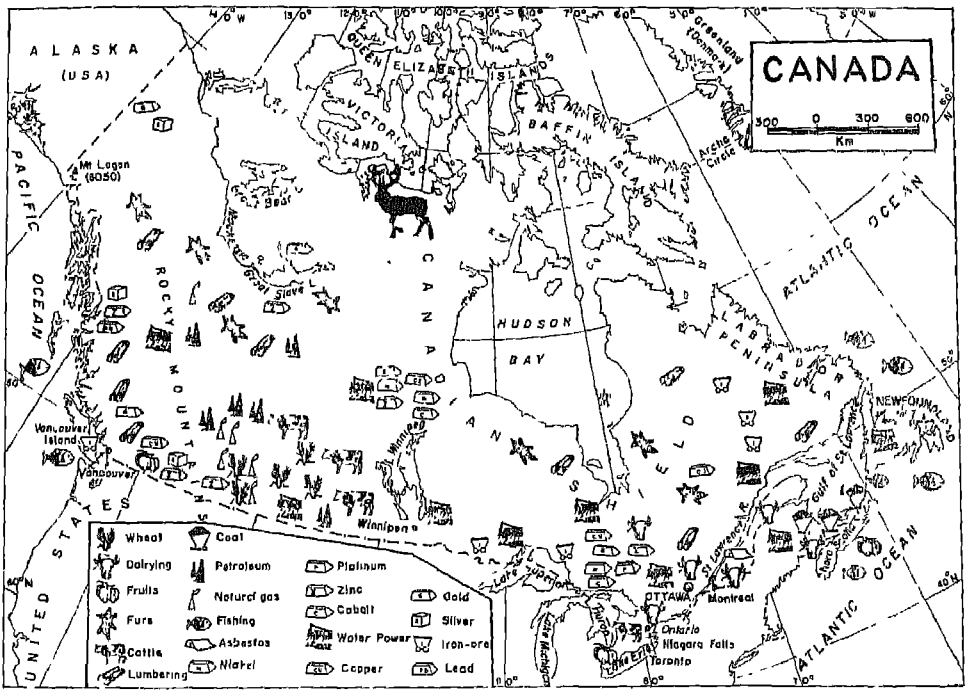


FIG. 38. *Canada—Crops, Minerals and Industries*
Note the crops, minerals and industries of Canada. Why is the greater part of Canada useless for farming?

are the main activities of Canada.

Agriculture: Nearly half of the land of Canada is a wasteland. Forests cover more than two-fifths of its total area. The remaining area, that is only one-tenth of the total land, is either under permanent pastures or has been brought under the plough. Even then Canada is a leading exporter of wheat in the world. Other major crops of Canada are oats and barley.

Agriculture in Canada is mechanized. Machines do much of the work. Most farms in Canada are family farms. The farmer owns the land and lives on it. He works it himself, with the assistance of his family. Some workers are hired at harvest time.

Wheat is the most important crop of Canada. The great wheat belt of Canada lies in the northern part of the Great Central Plains. This is one of the greatest agricultural regions of the world. Canada produces spring wheat as its winters are too cold to grow anything. Growing season is short and there are years when rainfall is very

XXX. *Apples Being Picked*
The apples are being picked in an orchard in Nova Scotia, Canada. Note how the man has been emptying his basket in a wooden case.

scanty. The scientists and the farmers together have been working hard to produce more and more from the farms inspite of harsh conditions. Winnipeg is the largest town of the prairies and a centre of wheat trade. The bulk of the prairie wheat is exported.

Nova Scotia is noted for its large apple orchards. This region is the largest supplier of apples.

In the drier parts of the prairie region, especially towards the Rocky Mountains, cattle-rearing is an important occupation. Canada produces all the meat its people need and still has plenty to export. Competitions in horse riding and wagon races are held every year in this part of the country.

In the St. Lawrence valley and Great Lakes region, cattle are reared mainly for their milk and dairy products. The rearing of cattle for milk and for the production of butter, cheese and condensed, powdered or dried milk is known as *dairy farming.*

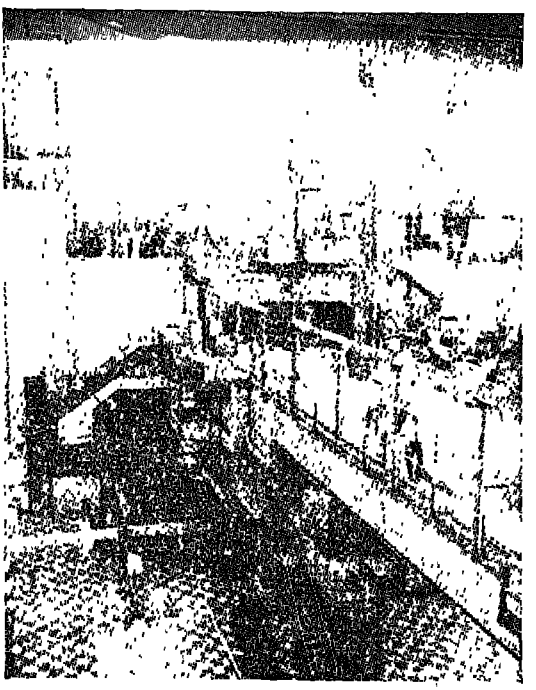
Lumbering: Lumber-jacks working in the forests fell trees. They also help in logging, splitting and hauling lumber. Forest activities such as felling trees and logging, splitting and hauling of lumber is known as *lumbering.* Wood-pulp, used in making paper, is the most valuable product of the forest.

The lumber-jacks live in log huts built for their winter residence in the lumber camps. Fully grown trees are felled and dragged over the frozen ground to the nearest river. They are stacked there until the spring. When ice begins to melt, the logs are floated down the stream to the saw mills. Huge rafts consisting of thousands of logs are floated from the lumber camp to the mills where they are made into paper and other useful products.

Forests in Canada abound in many kinds of fur-bearing animals. Many American Indians make their living by trapping animals for

their furs. Animals are trapped in winter when their furs are at their best. In winter, the trappers move into the forests and live there in tents or cabins made of logs. The trappers study the animal tracks in the snow and set their traps. After a few days they go from trap to trap. It takes them several days to see all the traps, take out animals that have been caught and reset the traps again. After completing a round of all the traps, they return to their camps where their families keep themselves busy in dressing the skins.

Now-a-days, special farms have been established where fur-bearing animals are raised. Export of furs and fur clothes brings a good amount of money to Canada.



XXXI *Inside an Atomic Power Plant*
This is an inside view of an atomic power station in Canada. What are the raw materials from which atomic energy is derived?

Fishing: Fishing is important in Canada especially in Newfoundland About nine-tenths of Canada's annual fish catch is exported. Cod is an important fish of the east coast and salmon, that of the west.

Mining: Canada is very rich in mineral resources. Many people are engaged in mining. The Canadian Shield contains many

important minerals. Canada is the world's leading producer of asbestos. It is a useful mineral because it is fire-proof. Canada is also the world's leading producer of nickel and platinum. It ranks second in the production of zinc, cobalt and magnesium. It occupies third position in the production of gold and silver. It is an important producer of iron-ore, copper and lead as well.

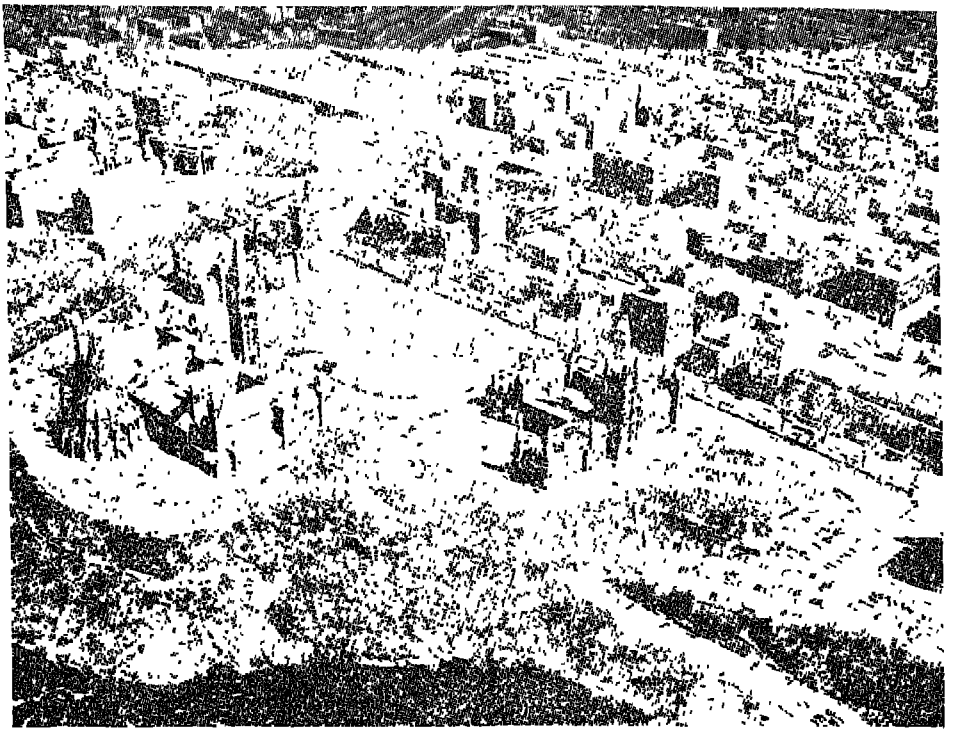
Among mineral fuels, Canada produces coal, petroleum, natural gas and uranium. This country is the world's third largest producer of natural gas. Canada produces atomic energy from uranium.

Canada has very large water-power resources. The country ranks second in the production of hydro-electricity. Niagara Falls is an important source of water-power for both Canada and the United States. Many rivers and stream have been harnessed to produce electricity. The development of water-power has made Canada one of the leading industrial countries of the world today.

Industries: One-third of the Canadian people depend directly on industries. The pulp and paper is the leading manufacturing industry of Canada. Canada is the world's largest producer of newsprint. Newsprint is a rough variety of paper used for printing newspapers. Millions of logs cut in the forest every winter are the chief raw material of this industry. The pulp and paper industry of Canada uses about one-third of all the electricity produced in the country. Canada exports much of its newsprint and pulp.

The smelting and refining of metals is the second most important industry of Canada. In this industry, metals such as copper, nickel, lead, zinc, uranium, gold and silver are separated from their ores. The process in which metals are extracted from their ore is known as *smelting*. Canada does not produce bauxite, an ore from which aluminium is obtained. But it imports it from other countries and

turns it into aluminium with the help of the abundant supply of its cheap hydro-electricity. Most of the aluminium thus produced is exported.



XXXII. *Ottawa—the Capital City of Canada*
In the foreground are the Canadian Parliament and other government buildings. Note that the city is situated on the high bank of the Ottawa River.

Canada now produces automobiles, transport equipments, electrical goods and machinery. It also produces chemicals and by-products of petroleum. Most of the industries in Canada are

located around the Great Lakes. Montreal is the largest city and chief commercial and industrial centre.

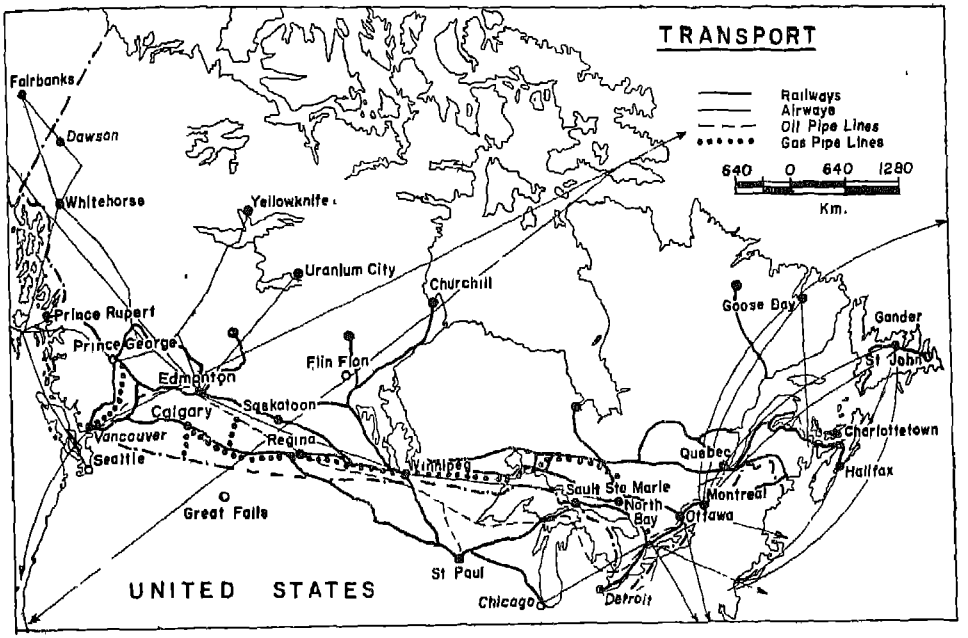


FIG. 39. *Canada—Transport*
Compare this map with the population map of North America What inference do you draw regarding the relationship between population and transport network in Canada?

People

Canada is thrice as large as India but its population is less than 20 million. This is even less than that of Gujarat. The distribution of population is very uneven. Nearly 80 per cent of the people live in a narrow belt less than 300 kilometres wide along the southern border. The average density of population of Canada is two persons per square kilometre.

Majority of the Canadians live in cities. Montreal is the largest city of Canada and Ottawa is its capital city. Toronto, Vancouver, Winnipeg, and Hamilton are the other important cities of Canada.

The people of Canada are mainly Europeans. English and French are the two official languages. Besides the Europeans, there are some Red Indians and the Eskimos who are the original inhabitants of Canada. Majority of Red Indians live in 'Indian reserves' and Eskimos live mostly in the tundra region in the north.

Eskimos are short and sturdy. They have light brown skin and black hair. They wear warm clothings to protect themselves from the severe cold. Most of them are hunters and trappers. When the Eskimos go out on their dog sledges in winter, for sealing and fishing, they often live in low dome-shaped houses made of frozen snow blocks. These ice-houses are known as *igloos*. In summer when the snow begins to melt, the Eskimos leave their igloos and stay in small tents, made of seal skins. These summer tents are known as *tupiks*. They are supported by rough poles of driftwood.

Transport

Railways are an important means of transport in Canada. The two transcontinental railways have been responsible for opening the prairies for large-scale agriculture and settlement.

Automobiles are becoming more and more popular as means of passenger transport. In Canada, there is a motor car for every four persons. Canada has built a number of national highways. There is a network of highways in the lowlands of the St. Lawrence and the industrial region around the Great Lakes.

The Great Lakes and St. Lawrence River provide an excellent

waterway for the steamers and ships. These waterways serve both Canada and the United States.

Air traffic is increasing day by day in Canada, especially in the northern parts where no other means of transport is available. Regular daily air routes link all the main towns and cities of Canada. Aeroplanes are useful in maintaining contact with the mining camps and fur ports.

The aeroplanes that fly from place to place in the northern parts of Canada use skis in place of wheels for landing in winter time. Thus they can come down on frozen lakes and rivers. In summer, they use floats so that they can land on the lakes, bays or rivers. At some places runways have been built, but aeroplanes very often make use of lakes and rivers for landing because they are quite numerous.

Trade

Canada has a big foreign trade. The chief exports are news-print, wood-pulp, timber, wheat, nickel, iron-ore, aluminium, petroleum, copper and asbestos. The chief imports are machinery, motor cars and their parts, refined petroleum, electrical goods, tractors and engines. More than half of its trade is with the United States.

THE NEW TERMS YOU HAVE LEARNT: *Blizzard*—Very strong cold winds accompanied with severe snow storms, especially in the polar regions. *Dairy Farming*—A kind of agriculture in which major emphasis is on breeding and rearing of milch cattle. Some crops are raised mainly to feed these cattle. *Lumbering*—Forest activities such as felling of trees and logging, splitting and hauling lumber.

EXERCISES

Review Questions

1. Answer the following questions:
   (i) Which is the longest river in Canada?
   (ii) Why are the St. Lawrence lowlands and the region around Great Lakes very important to Canada?
   (iii) Why is lumbering in the forests of eastern Canada done mainly in winter?
   (iv) Why is the climate of western coast of Canada mild?
   (v) Why do aeroplanes very often make use of lakes and rivers for landing in the northern parts of Canada?

2. Give one term for each of the following:
   (i) A highly zigzag coastline with alternate creeks and capes.
   (ii) Forest activities of felling trees and logging, splitting and hauling lumber.

3 Make out correct pairs from the two columns.

(a)	The national capital of Canada	(i)	Toronto
(b)	The largest sea-port on the Atlantic coast	(ii)	Ottawa
(c)	An all-weather sea-port on the Atlantic Coast	(iii)	Winnipeg
(d)	A leading port on the Pacific coast	(iv)	Quebec
(e)	A large wheat market	(v)	Montreal
(f)	An industrial centre in the Lakes region	(vi)	St John
		(vii)	Vancouver
		(viii)	Churchill

4. Give an account of the life of trappers in Canada.

5. What are the major mineral and power resources of Canada? Where are they located?

6. Give a brief account of agricultural practices and products of Canada. Mention the important regions where the different crops are produced.

7 Give an account of the life of the Eskimos.

Picture Reading

8. Compare and contrast Australian silos with Canadian grain elevators.

Map Work

9. In outline maps of Canada show the distribution of crops, minerals, industries and railways.

Topic for Class Discussion

10. *'Natural Resources of Canada and Their Wise Use'*

Collect information on this topic and discuss among yourselves what has made Canada a very prosperous country.

18

The Land of Rich Agriculture and Many Industries

THE TERMS YOU ALREADY KNOW. *National Park*—A reserved area for preserving its natural vegetation, natural beauty and wild-life. *Fishing*—Catching fish and other animal life from water in large scale and its processing and packing. *Skyscraper*—A group of high, multi-storeyed buildings, forming a skyline.

THE United States of America is indeed a very important country of the New World. It is often called America and its citizens Americans. The United States is made up of 50 states. Forty-eight states are contiguous. Of the remaining two, the state of Alaska lies in the north-western part of the continent; and the Hawaii is a group of islands in the Pacific Ocean. The Hawaii Islands are situated almost mid-way between Asia and North America.

The United States has made tremendous progress during the last two hundred years. It has become a rich and the most important industrial nation of the world.

Look at the map in Fig. 40. Name oceans lying on the either side of the United States. Which countries have common land

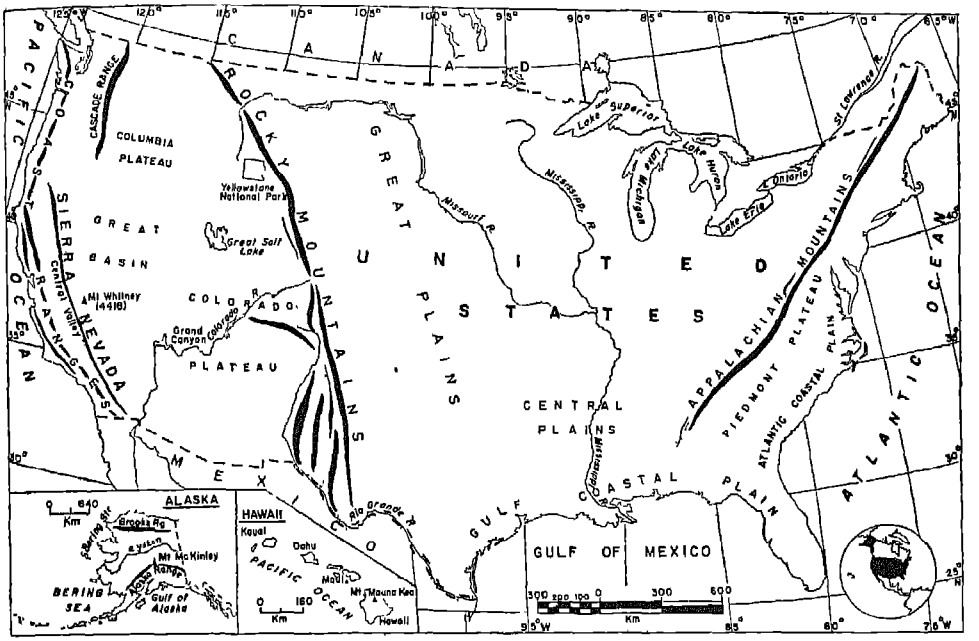


FIG. 40 *The United States—Physical Features*
Compare this map with the map of physical features of North America. What common features do you see in both the maps?

frontiers with the United States? Find out the latitudes and longitudes of the country. In area, it is slightly smaller than Canada; or nearly three times the size of India. It is such a vast country that an express railway train running between New York and San Francisco takes five days for the journey and crosses four time zones. Normally how many degrees of longitude make one time zone?

Land

The major physical divisions of the United States are: the

Western Cordilleras, the Great Interior Plains, and the Eastern Highlands.

The Western Cordilleras cover nearly one-third of the country. It consists of a few parallel mountain ranges running from north to south. The Rockies, the easternmost range, is the highest of them. To its west lie the Cascade Range in the north and Sierra Nevada in the south. Further west, that is close to the Pacific Ocean, lies the Coast Range.

There are high plateaus enclosed by the Cascade and Sierra Nevada ranges on the one hand and the Rockies on the other. On the map, you will see the Columbia Plateau in the north and Colorado Plateau in the south. The famous Grand Canyon of the Colorado River is in the Colorado Plateau. Between the Columbia Plateau and the Colorado Plateau, lies the Great Basin, a region of inland drainage Note that the rivers of this region fail to reach the ocean.

Many of the mountain peaks of the Western Cordilleras have snow on them all the year round. Mt. Whitney with a height of 4,418 metres above sea level is the highest peak. Compare its height with the Mt. Everest. In this region the Yellowstone National Park is a great attraction for tourists. Its high mountain peaks, canyons, volcanoes, hot springs and geysers add to its astonishing beauty.

The Great Interior Plain drained by the Mississippi and its tributaries lies between the Rockies on the west and the Appalachians on the east. It contains half the land of the country much of which has been brought under the plough.

The Eastern Highlands consist of the Appalachian Mountains. These old and low mountains are flanked by narrow low plateaus on either side. The plateau lying to the east of the mountains rises

abruptly over the Coastal Plains and extends towards the foot of the mountains. Such a plateau lying between a lowland or a sea on one side and the mountain on the other is called a *piedmont plateau.* Several rivers tumble down the steep edge of this plateau forming waterfalls. The eastern edge of the plateau along which there are about a dozen waterfalls is known as a *fall line.* These waterfalls have provided favourable sites for producing hydro-electricity. Trenton, Baltimore, Washington and Richmond are some of the important cities that have grown near the fall line. Note that the rivers of the Eastern Highlands do not provide waterways to the interior. Why is it so?

Climate and Vegetation

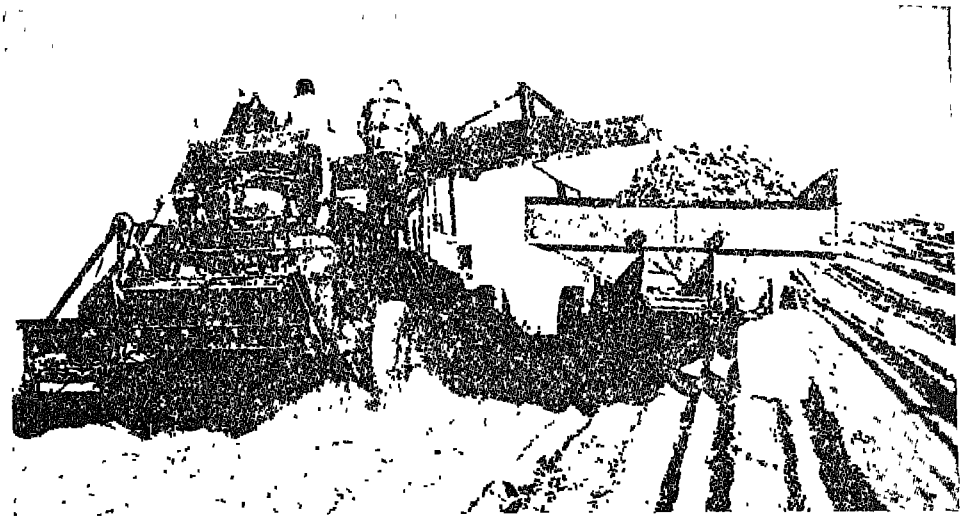
The United States of America has varied types of climates. Its southern half lies in the warm temperate zone and the northern half in cool temperate. The eastern half of the country receives a fair amount of rainfall. The rainfall in this region decreases from south to north and from east to west. The snowfall is confined to the northern part of the country. The great interior plain has a continental type of climate with rainfall concentrated mostly in summer. There is some snowfall in winter.

The climate of the western part of the country is more varied. The north-western region receives heavy rain all through the year under the influence of the westerlies. There the climate is generally mild except in high altitudes. Southern California receives winter rains when the westerlies tend to shift towards the south. With its dry summers and wet and mild winters it has a typical Mediterranean type of cimate. The Great Basin and the Plateau of Colorado are deserts with alternately high and low temperatures and little rainfall.

The coniferous forests are confined to the high rainy slopes of the Western Cordilleras. The giant Redwood and Douglas Fir trees are the well known of the north-western part of the country. The most dominant natural vegetation of the United States consists of mixed forests. They contain both coniferous and deciduous trees. The natural vegetation of its interior plains are the prairie grasses. The desert region has cactuses and a few varieties of thorny bushes.

Economic Development

The United States of America is a leading agricultural and industrial country in the world. It leads the world in a large number of agricultural products. Much of the farm produce of the United



XXXIII *A Potato Harvester in Action*
This giant potato harvester digs the potatoes from the ground and transfers them to an accompanying truck How does this machine help the American farmer?

States goes into the international trade. So is true of its manufactured goods.

Agriculture: About one-fifth of the total area of the country has been brought under the plough. By and large, the soils of the agricultural land are fertile. There is an assured rainfall over most of its agricultural land. These large agricultural lands are being tilled and looked after by a very small proportion of its population.

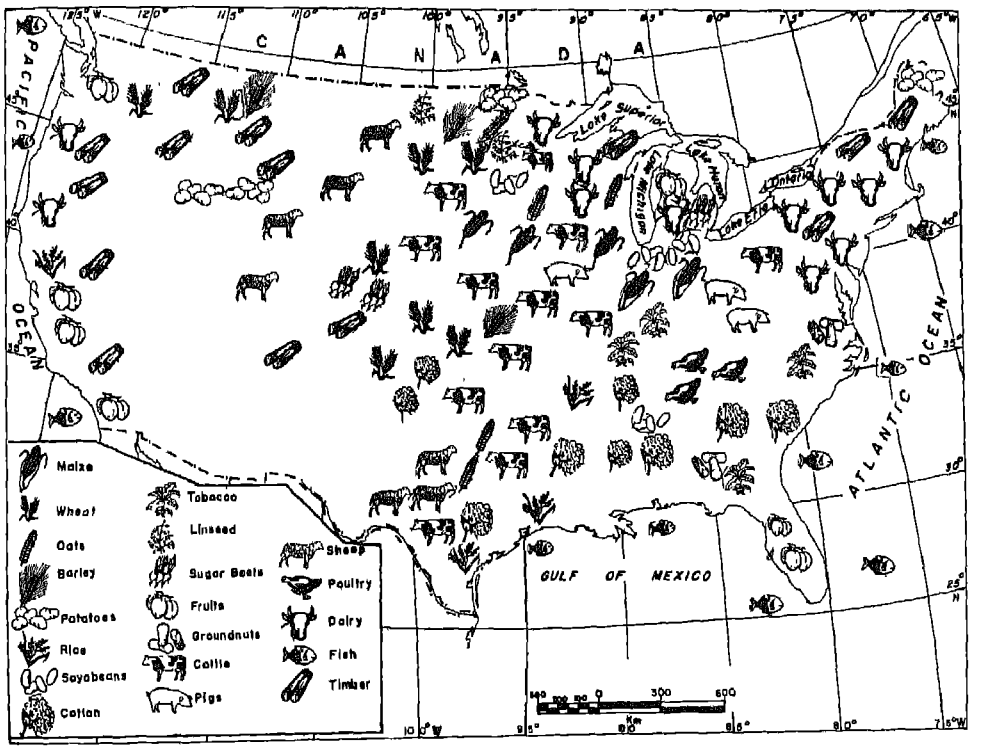


FIG. 41. *The United States—Crops and Live-stock*
Note the crops and animals reared in the United States. Why is cotton grown in the south?

Today, only one in every twelve Americans work on the farm. And then every farmer is able to produce enough food to feed about 30 persons! He is able to get such a high produce from the field because he uses a variety of machines to perform various farming operations on his field. He also uses fertilizers, better seeds and scientific farming practices. It is no wonder then that an American Farmer enjoys a very high standard of living with all the amenities of modern life available on his farm.

Maize, wheat, oats and barley are the important cereals of the United States. Maize is the most important crop of the country. In fact, two-fifths of the world's total maize is produced in this country alone.

Corn belt is the main agricultural region of the United States. It is important for cereals as well as animal products. Most of the maize is used for feeding cattle, pigs and poultry. It, therefore, reaches the dining table in the form of beef, pork and eggs.

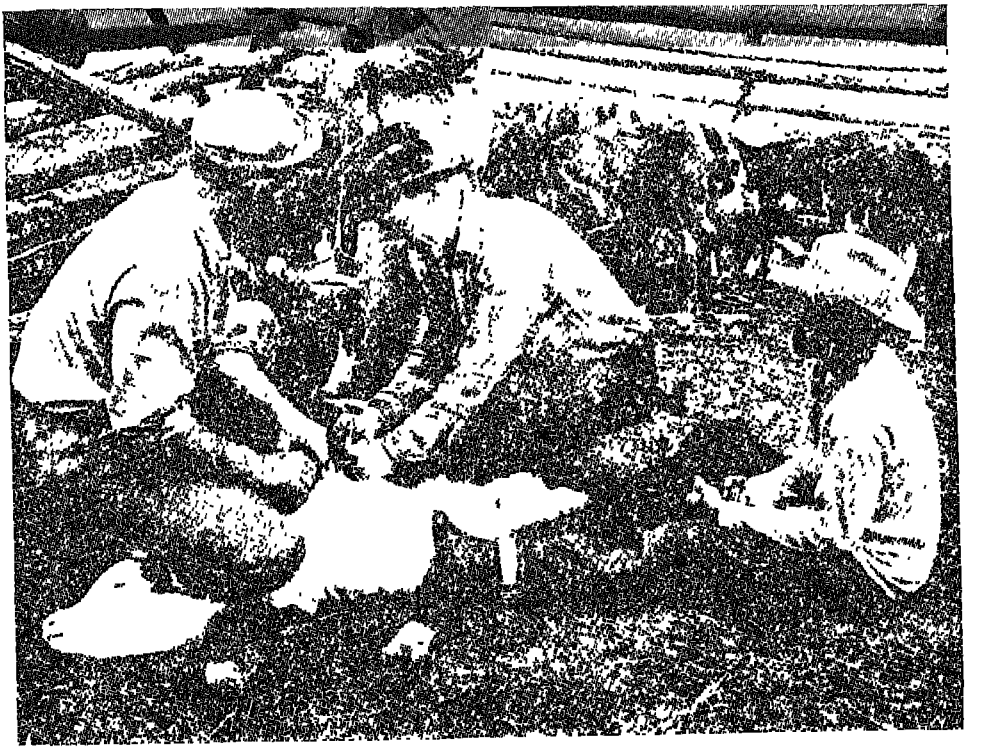
Wheat is the second important cereal of the United States. Wheat and wheat-flour are exported in large quantities. Only the Soviet Union produces more wheat than the United States. Locate the wheat producing areas on the map. In the central part of the Great Plain, wheat is grown in winter and harvested in early summer. In the northern part it is grown in spring and harvested in late summer. Like the Canadian prairies, this region is too cold for growing wheat in winter. Oats and barley are also produced mainly to feed the animals.

Locate the cotton producing regions on the map. Why is cotton grown mainly in the south? Much of the cotton grown in the region goes to Memphis, the greatest cotton market in the world. The United States of America also produces potatoes, tobacco,

sugar-beets and soyabeans. Fruits like apples, grapes and peaches are also grown on a large scale.

Animal Rearing: Animal rearing is an important agricultural activity in the United States. The country has a large number of cattle, pigs and sheep.

Large herds of beef cattle are reared in the grassy plains and plateaus of the western United States. This region is known for



XXXIV *A Calf Being Inoculated*
Look at a cowboy inoculating a calf against disease Note the clothes of the cowboys working on an American ranch.

cattle ranches. The headquarters of the ranch are a group of buildings located in the valley. The owner's house is a simple one-storey building with green lawns and small groves of trees around it. Beyond the house are some sheds in which cattle are kept in winter. There are a couple of large *corrals* where the cattle are sorted, branded and bred. A ranch also possesses a special place where cattle are dipped in disinfectants to control diseases. This place is known as *vats*. The other ranch buildings are a blacksmith's shop, a storehouse, a shed for keeping machines and a bunkhouse for the cowboys.

In early summer, the cattle are rounded up from all parts of the ranch by the cowboys. They are taken to the corrals where new calves are branded. Cowboys sort the cattle so that some of them are taken to the cool mountain pastures, and the others are kept on the ranch.

In early winter cattle are brought back to the ranch. The cattle that are to be sold are taken by trucks and then by railway cattle-cars to farms in the maize belt. There they are fattened before they are taken to market.

Dairy farming is carried generally throughout the country. But the chief regions lie around the Great Lakes and in the north-eastern parts of the country. The cool humid climate is most favourable for milch cattle. Most of the dairy farms are located near large cities. Why should it be so? Only the Soviet Union produces more milk than the United States in the world. In the production of cheese and butter the United States ranks first and second respectively in the world.

Fishing: Fishing is an important activity along the Atlantic and the Pacific coasts. Cod is the important fish of the North

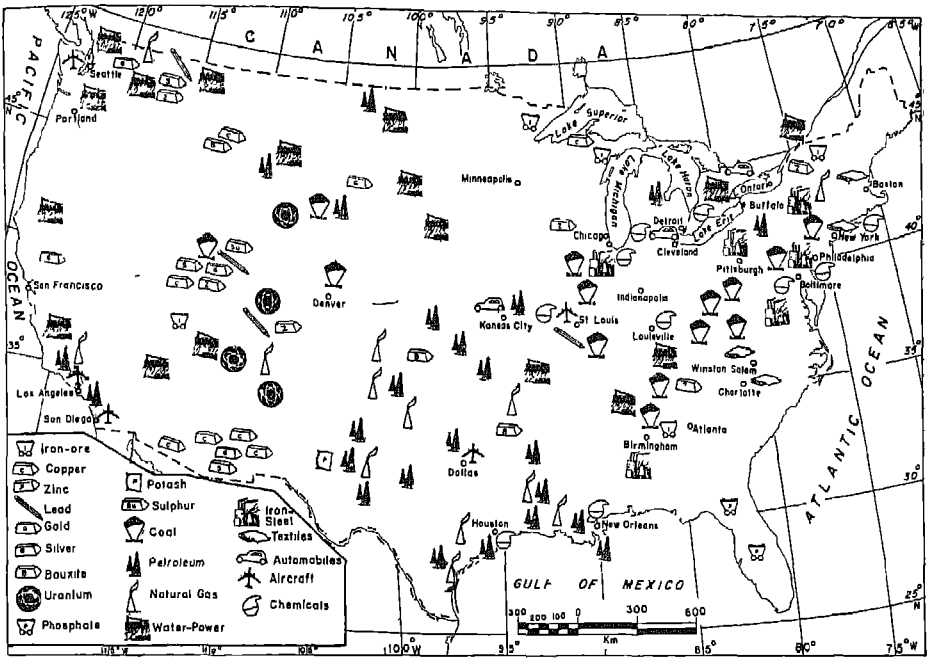


FIG 42. *Minerals and Industries of the United States*
Note the location of coal, iron and petroleum. Why has northeastern part of the United States become the most important manufacturing region of the country?

Atlantic Ocean, especially, the Grand Banks. So is salmon of the Pacific Ocean. Only Peru and Japan surpass the United States in the volumes of its fish catch.

Forestry: About one-third of the total area of the United States is still under forests. The forests of the United States provide large quantities of round wood. In the production of the wood-pulp, the United States surpasses all other countries. It is the second largest producer of newsprint in the world standing next only to Canada.

Minerals and Power: Look at the map in Fig. 42. Note that the United States possesses a wide variety of minerals. The country is rich in metallic minerals of iron, copper, zinc, lead, gold and silver. It leads the world in the production of copper and is a great producer of iron-ore, zinc and lead. The iron-ore deposits located near Lake Superior are one of the most extensive in the world. Bauxite and uranium are the other metallic minerals found in the United States.

The United States has large deposits of phosphate potash and sulphur. They are used in manufacturing fertilizers and certain chemicals.

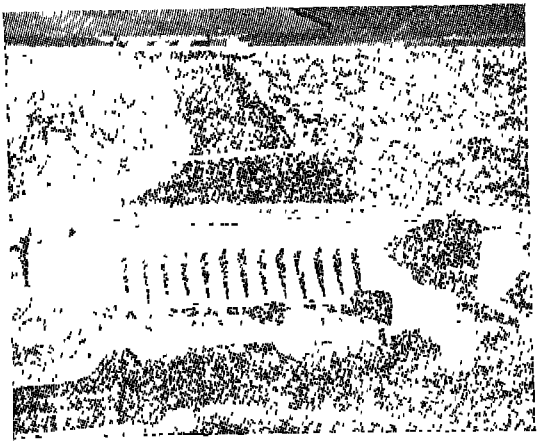
The United States possesses large resources needed to produce power. They are coal, petroleum, natural gas, running water and uranium.

The United States has large reserves of coal and it is one of the leading producers of coal in the world. Its coal deposits vary in quality and are widely distributed. The most prominent among them are the Appalachian coal-fields.

Petroleum resources of the United States are very large. The country leads the world in the production of petroleum. Today, it produces about one-third of the world's total output of oil. Its major oil fields are located in the Central Plains and along the Gulf Coast. An extensive system of pipelines connects oil fields with their market centres. The oil refineries along the Atlantic coast are some of the largest and most modern in the world.

The United States leads the world in the production of natural gas. Pipelines stretch from the gas fields for hundreds of kilometres across the country. They carry gas to many cities and industrial centres. Steel mills and other big factories that need great amounts

of fuel often use natural gas. Natural gas is also used in heating homes and office buildings. It also serves as a fuel for kitchen stoves.



XXXV. *The Niagara Water-power Station*
This is one of the few largest water-power stations of the world Power generated at this station is shared by Canada and the United States. Find out from the map the location of this water-power station.

The United States has large water-power resources. It is the leading producer of hydro-electricity in the world. The Pacific and mountain states of the west are poor in coal but rich in water-power resources. The country has now several atomic energy plants which produce electricity.

Industries: The United States of America is the world's leading manufacturing country. Its huge mineral deposits, agricultural crops and various animal products provide the raw materials for its industries. There is hardly any dearth of fuel or power to run big industries. It has ample capital and skilled labour. There are efficient means of transport and very big markets both in and outside the country. All these factors are responsible for the rapid growth of its industries.

Iron and steel is the foremost industry of the United States. No other country produces more steel than the United States. It forms the basis for manufacturing heavy armaments, locomotives,

railway wagons and automobiles. The United States is the leading producer of aeroplanes. Aluminium forms the important raw material of this industry.

The country accounts for about half the world's production of cars and a third of the total commercial vehicles. Detroit is the chief production centre of automobile industry.

The factories producing cars are very large. The most interesting section of an automobile factory is the huge shed where the parts are assembled to make a car. The cars under preparation move along a belt known as conveyer belt. As they move along, the workmen fit various pieces or parts until each car is completely ready. This is known as an *assembly line.*

The United States produces various kinds of machines and tools. The country has started using more and more machines that do work by themselves. These machines working automatically go a long way in saving labour, and reducing thereby the cost of production.

Smelting ores for manufacturing metals is an important industry of the United States. It also produces a variety of electrical goods. Its textile industry is also important. Cotton, wool and cellulose are the raw materials of this industry. All of them are available in plenty.

Paper and food processing are other large scale industries of America. Meat, sugar, dairy products and vegetable oils are the leading items of the food processing industries.

Look at the map and note that most of the industries of the United States are located in the north-east. This region is the most industrialized region of America. Boston, New York, Philadelphia, Detroit and Chicago are the leading manufacturing cities in the

region. Los Angeles is another important industrial centre. Where is it situated?

People

The total population of the United States is about 200 million. This gives it an average density of about 20 persons per square kilometre. The population is, however, very unevenly distributed. About three-fourths of the total population lives in the eastern half of the country. Majority of the people in the United States live in cities.

New York is the second largest city of the world, standing next only to Tokyo in Japan. New York city began as a small river-island village at the mouth of the Hudson River. Today, it has a population of over eight million people. It is the headquarters of the United Nations. This centre of international trade and commerce is known for its skyscrapers. Chicago is the second largest city of the United States. Washington, D.C. (District of Columbia) is the national capital and is a planned city.

People living in the United States are mostly of the European origin. English is the language spoken all over the country. Besides the white people, there are Negroes and the American Indians. The American Negroes form about one tenth of the total population of the country. They are descendants of the slaves brought into America by the early white settlers. A large number of them live in the southern states. They are mostly Christians and speak English. They are pressing hard for their rights in America. Many of the white people are also supporting them in their struggle. But some white people have not been able to get over the colour prejudice. The American Indians who number only half a million live in reserves.

Transport

The United States has a very good system of transport. Most of the large cities are connected by railways, roads and airways. Railways form a vast network throughout the country. They carry large amount of cargo. Today, motor vehicles also carry considerable cargo. The country possesses a very good network of highways and freeways. Boats and steamers are also the carriers of large amount of goods, especially in the Great Lakes and the St. Lawrence River. The ports have excellent shipping services. Aeroplanes are now becoming more and more popular among the passengers covering long distances.

Trade

Today, the United States is the leading country of the world in trade and commerce. It exports machinery, motor cars, railway engines, aeroplanes and military equipment. Electrical goods and electronics are yet another important category of its exports. It also exports cotton, woollen and synthetic textiles. Even the agricultural products such as wheat, wheat-flour, cotton, tobacco, vegetable oils are still among its important exports. Important imports are petroleum and its products, mineral ores, coffee, wood-pulp, paper, sugar and rubber.

THE NEW TERMS YOU HAVE LEARNT: *Piedmont Plateau*—A plateau rising abruptly above a coastal lowland or the sea and extending up to the foot of a mountain. *Fall Line*—The eastern edge of the plateau along which the rivers tumble down to the Atlantic coastal lowlands in the United States.

EXERCISES

Review Questions

1. Answer the following questions:
   (i) Which are the two states of the United States detached from the country's mainland?
   (ii) Name the two most important cereals of the United States.
   (iii) What are the three important industrial crops of the United States?
   (iv) Why are most dairy farms located near large cities?
   (v) Which is the leading coal-field of the United States?

2. Distinguish between an intermont plateau and a piedmont plateau.

3. Make out correct pairs from the two columns:

(a)	The national capital of the United States	(i)	New York
(b)	The largest cotton market in the United States	(ii)	New Orleans
(c)	The largest railway junction of the world	(iii)	Memphis
(d)	A fall line city	(iv)	Chicago
(e)	A centre of automobile industry	(v)	Niagara
(f)	Headquarters of the United Nations	(vi)	Washington D.C.
(g)	An industrial centre on the Pacific Coast	(vii)	Richmond
(h)	An important sea port on the Gulf coast	(viii)	Detroit
		(ix)	Los Angeles

4. Give an account of the iron and steel industry of the United States.

5. State how and where motor cars are produced in the United States. Why does the United States lead the world in automobile industry?

Picture Reading

6. Compare the photograph XXXIII with XX. How is the operation of harvesting potatoes in the United States quite different from that of harvesting sugar-cane in Brazil?

Map Work

7. On a big outline map of the United States show by different symbols important crops, minerals and industries of the country.

Topic for Class Discussion

8. '*What is more Important—Natural Resources or People*?'

For the development of a country which one of the two is really more important? Divide the class into two: one for resources and the other for people in North America. See what conclusions you arrive at through discussion.